

**COMMONWEALTH OF KENTUCKY**  
**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

<b>THE APPLICATION OF KENTUCKY UTILITIES</b>	)	
<b>COMPANY FOR APPROVAL OF ITS 2002</b>	)	<b>CASE NO. 2002-00146</b>
<b>COMPLIANCE PLAN FOR RECOVERY BY</b>	)	
<b>ENVIRONMENTAL SURCHARGE</b>	)	

<b>THE APPLICATION OF LOUISVILLE GAS AND</b>	)	
<b>ELECTRIC COMPANY FOR APPROVAL OF ITS</b>	)	<b>CASE NO. 2002-00147</b>
<b>2002 COMPLIANCE PLAN FOR RECOVERY BY</b>	)	
<b>ENVIRONMENTAL SURCHARGE</b>	)	

**DIRECT TESTIMONY**

**AND EXHIBITS**

**OF**

**LANE KOLLEN**

**ON BEHALF OF THE**  
**KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC.**

**J. KENNEDY AND ASSOCIATES, INC.**  
**ROSWELL, GEORGIA**

**November 2002**

**002894**

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**DIRECT TESTIMONY OF LANE KOLLEN**

**I. QUALIFICATIONS AND SUMMARY**

1   **Q.     Please state your name and business address.**

2

3   **A.     My name is Lane Kollen. My business address is J. Kennedy and Associates, Inc.**  
4           **("Kennedy and Associates"), 570 Colonial Park Drive, Suite 305, Roswell, Georgia**  
5           **30075.**

6

7   **Q.     What is your occupation and by whom are you employed?**

8

1 A. I am a utility rate and planning consultant holding the position of Vice President and  
2 Principal with the firm of Kennedy and Associates.  
3

4 **Q. Please describe your education and professional experience.**  
5

6 A. I earned a Bachelor of Business Administration in Accounting degree from the  
7 University of Toledo. I also earned a Master of Business Administration degree from  
8 the University of Toledo. I am a Certified Public Accountant, with a practice license,  
9 and a Certified Management Accountant.  
10

11 I have been an active participant in the utility industry for more than twenty-five years,  
12 both as an employee and as a consultant. Since 1986, I have been a consultant with  
13 Kennedy and Associates, providing services to state government agencies and large  
14 consumers of utility services in the ratemaking, financial, tax, accounting, and  
15 management areas. From 1983 to 1986, I was a consultant with Energy Management  
16 Associates, providing services to investor and consumer owned utility companies. From  
17 1976 to 1983, I was employed by The Toledo Edison Company in a series of positions  
18 encompassing accounting, tax, financial, and planning functions.  
19

1 I have appeared as an expert witness on accounting, finance, ratemaking, and planning  
2 issues before regulatory commissions and courts at the federal and state levels on more  
3 than one hundred occasions. I have developed and presented papers at various industry  
4 conferences on ratemaking, accounting, and tax issues. I have testified before the  
5 Kentucky Public Service Commission on numerous occasions, including recent  
6 Louisville Gas and Electric ("LGE") and Kentucky Utilities Company ("KU") fuel  
7 adjustment clause proceedings, base ratemaking and alternative rate plan proceedings,  
8 and the proceeding involving the merger of the two Companies. My qualifications and  
9 regulatory appearances are further detailed in my Exhibit \_\_\_ (LK-1).

10  
11 **Q. On whose behalf are you testifying?**

12  
13 A. I am testifying on behalf of the Kentucky Industrial Utility Customers, Inc. ("KIUC"), a  
14 group a large users taking electric service on the LG&E and KU systems.

15  
16 **Q. What is the purpose of your testimony?**

17  
18 A. The purpose of my testimony is to address the Companies' proposed recovery of 2002  
19 environmental compliance plan costs through the environmental cost recovery ("ECR")  
20 surcharge mechanism.

1   **Q.    Please summarize your testimony.**

2

3    A.    The Companies' proposed recovery of their 2002 environmental compliance plan costs

4           is excessive and should be reduced to properly reflect the deferral and amortization of

5           one-time operation and maintenance ("O&M") expense costs (LG&E only) and O&M

6           expense savings resulting from the capital investments in new pollution control projects.

7           The one-time \$6 million O&M expense proposed for the dredging of the Mill Creek ash

8           pond should be deferred and amortized over no less than 4 years. The annual O&M

9           expense savings from the capital investments in new pollution control projects that

10          should be recognized in the ECR is in excess of \$1.3 million annually for LG&E.

11

12          The Companies are entitled only to the recovery of their net reasonable environmental

13          costs, no more and no less. The Commission already has made the determination in

14          LG&E's initial ECR recovery proceeding, Case No. 94-332, that LG&E is required to

15          net savings in operating expenses against incremental costs of new pollution control

16          projects in its ECR filings. Such a result is reasonable because the incurrence of capital

17          costs frequently results in reductions in O&M expense, consistent not only with

18          economic and financial theory, but also with the Companies' experience and their

19          internal economic analyses.

1 In addition, the Commission should ensure that the Companies account properly for the  
2 net removal costs associated with existing environmental plant by charging the  
3 accumulated depreciation reserve rather than including such costs in new capital  
4 investment. There is some ambiguity, based upon the Companies' internal economic  
5 analyses provided in response to discovery, as to whether the Companies are properly  
6 accounting for removal costs.

**II. ONE-TIME O&M EXPENSE COSTS**

**Q. Please describe LG&E's proposed recovery of the one-time cost to dredge the Mill Creek ash pond in conjunction with the expansion of the landfill (Project 10).**

A. LG&E proposes to account for these dredging costs as O&M expense and to include the costs in its ECR filings "using a 12-month rolling average calculation beginning with the month in which the expenses are originally incurred," according to its testimony and its response to Staff-1-12(d).

**Q. Do you agree that it is appropriate to recover these one-time costs as incurred on a 12-month rolling average basis?**

A. No. These costs will be incurred to significantly extend the remaining useful life of the Mill Creek ash pond and should be recovered through the ECR over a period of time commensurate with the extended life of the ash pond. LG&E estimates that the removal of 1 million tons of ash from the ash pond will provide an additional 3 to 4 years of service. The greater the volume of ash removed, the greater the extension of the remaining useful life of the ash pond, all else equal. However, LG&E has not yet determined the volume of ash that will be removed in order to optimize the costs and

1 benefits of its 2002 compliance plan. Thus, the extension of the remaining useful life of  
2 the ash pond may be more than 4 years.

3  
4 **Q. Should the Commission direct LG&E to defer these one-time costs as incurred and**  
5 **then amortize the deferred amounts over the remaining extended useful life of the**  
6 **ash pond?**

7  
8 A. Yes. First, a deferral and amortization properly recognizes that this one-time cost was  
9 incurred in order to extend the useful life of the ash pond, similar to a capital investment  
10 that would be recorded in plant in service and depreciated over the useful life of the  
11 asset.

12  
13 Second, a deferral and amortization properly matches the ECR recovery with the period  
14 of time that benefits will be received from the incurrence of the cost, again similar to the  
15 matching of revenues and costs associated with other capital investments. In Case No.  
16 2001-169 involving the Companies, the Commission recently recognized the application  
17 of this matching principle when it approved the deferral and amortization of workforce  
18 reduction costs over the period of time that benefits were anticipated to be received from  
19 the incurrence of the cost.

1 Third, this one-time cost is not recurring and should not be recovered in the same  
2 manner as other O&M expenses. Again, this is similar to the workforce reduction one-  
3 time costs that were not recurring and the Commission's decision to allow amortization  
4 of those costs over a multi-year period.

5  
6 Fourth, through the deferral and amortization, the Company is provided full recovery of  
7 its costs and is not harmed. Only the timing of recovery is modified to reflect the  
8 amortization of the costs over the period for which benefits are received. Both  
9 Generally Accepted Accounting Principles (Statement of Financial Accounting  
10 Standards 71) and the FERC Uniform System of Accounts allow the deferral of such  
11 costs in the form of regulatory assets. Thus, even if such costs do not meet the  
12 accounting requirements for capitalization as plant costs, the Commission retains and  
13 should exercise its discretion to adopt a ratemaking treatment with the same effect,  
14 which then is recognized for accounting purposes.

15  
16 **Q. What amortization period should the Commission utilize for these one-time costs?**

17  
18 **A.** The Commission should establish an amortization period based upon the extended  
19 remaining useful life of the ash pond. However, the remaining useful life of the ash  
20 pond is not known with certainty at this time because it is dependent upon the volume of

1 ash actually removed. Consequently, the Commission initially should establish a 4 year  
2 amortization period, based upon the 1 million ton estimate, and then adjust the  
3 amortization period once LG&E determines the actual volume of ash it will remove and  
4 the related extended remaining useful life of the ash pond.

5  
6 **Q. Should LG&E be allowed to include the unamortized balance of the Mill Creek ash**  
7 **pond dredging costs in rate base?**

8  
9 **A.** Yes. This would ensure that LG&E recovers the carrying costs associated with the  
10 deferral.

1                                   **III. RECURRING O&M EXPENSE SAVINGS**

2

3   **Q.     Have the Companies proposed recovery of any recurring O&M expenses or**  
4       **savings in conjunction with their 2002 compliance plans?**

5

6   **A.     No. The Companies have not proposed any recognition of O&M expenses or savings in**  
7       **conjunction with their proposed 2002 compliance plans. They have not proposed any**  
8       **recognition because they “do not anticipate significant changes in the ongoing operation**  
9       **and maintenance expenses to be incurred as a result of the new and additional pollution**  
10      **control projects,” according to the testimony of Mr. Rives. Mr. Rives did not define the**  
11      **Companies’ interpretation of the word “significant.”**

12

13   **Q.     Do the Companies nevertheless anticipate changes in the ongoing O&M expenses**  
14      **based upon your review of their cost benefit analyses provided in response to**  
15      **discovery?**

16

17   **A.     Yes. Perhaps these changes are not viewed as significant by the Companies, but their**  
18      **internal economic analyses clearly indicate and quantify net reductions in O&M**  
19      **expenses as the result of their 2002 compliance plans. The Companies’ economic**

1 analyses indicate no net increases in O&M expenses for any of the proposed projects,  
2 other than the one-time costs to dredge the Mill Creek ash pond (Project 10).

3  
4 **Q. Should the Companies' O&M expense savings be recognized as an offset to the**  
5 **2002 compliance plan costs recovered through the ECR?**

6  
7 A. Yes. The Companies are entitled only to recover the reasonable costs of environmental  
8 compliance pursuant to the ECR statute. The reasonable costs are not the gross costs,  
9 but rather the net costs. The costs actually incurred by the Companies are the gross costs  
10 less O&M expense savings. The O&M expense savings are achieved directly as the  
11 result of the capital investments in the pollution control projects. Thus, the savings are  
12 inseparable from the costs and costs should be considered only on a net basis, not a  
13 gross basis.

14  
15 **Q. Has the Commission already made the determination that only net costs, not gross**  
16 **costs, may be recovered through the ECR?**

17  
18 A. Yes. The Commission's Order in Case No. 94-332 requires LG&E to reduce operating  
19 expenses to reflect the costs of the compliance plan included in existing rates, stating  
20 that "The operating expenses should also be adjusted to reflect costs of the compliance

1 plan included in existing rates.” The Commission has never retracted that statement of  
2 principle.

3  
4 The Commission also stated in that Order that it would be illegal to not reflect the  
5 savings from costs that were avoided due to the new pollution control projects, stating  
6 that “To require ratepayers to pay a surcharge for the costs of the five compliance  
7 projects while the existing rates include the cost of related plant no longer in service  
8 would be unreasonable and a violation of KRS 278.183(2).” The Commission has never  
9 retracted that determination of legality.

10  
11 In conjunction with the various compliance plans submitted by LG&E and proceedings  
12 to review the costs of those compliance plans, the Commission decisions specifically  
13 require the Companies to reduce the cost of their compliance plans by removing from  
14 the ECR revenue requirement formula the costs included in existing rates for net plant  
15 that is retired in conjunction with the implementation of the Companies’ compliance  
16 plans and the related depreciation expense, property tax expense, and insurance expense.  
17 The Companies also are required to recognize the gains from the sale of allowances  
18 through the ECR, an issue that was strongly contested by LG&E in Case No. 94-332.  
19 In addition, the Commission requires the Companies to further allocate the net costs to  
20 be recovered between jurisdictions and retail and off-system sales.

1  
2 In summary, the Commission has a clear history of assessing ratepayers environmental  
3 costs through the ECR only on a net basis, excluding costs included in existing rates that  
4 no longer will be incurred (savings) and excluding the costs caused by other  
5 jurisdictions and off-system sales.  
6

7 **Q. Does the failure to recognize the O&M savings as an offset to the gross compliance**  
8 **costs allow the Companies to game the single issue ECR surcharge ratemaking**  
9 **process?**  
10

11 A. Yes. The Company can recover the same costs twice by selectively including only the  
12 gross costs of compliance in the ECR while retaining the savings in whole or part  
13 through the base ratemaking process, whether that is through the Companies' earnings  
14 sharing mechanism ("ESM") rate plans or some other form of base ratemaking. As  
15 evidenced by their internal economic analyses, the Companies' explicitly consider the  
16 ratemaking impacts of their capital investment projects, including recovery through the  
17 ECR, in their capital investment decisions.  
18

19 The Commission should not allow the Companies the discretion to impose the entirety  
20 of the gross capital costs of pollution control projects upon ratepayers through the ECR,

1 while continuing to recover the O&M costs through its existing base rates that their own  
2 internal economic analyses indicate will be avoided.

3  
4 **Q. Do the Companies incur capital costs for new pollution control projects in order to**  
5 **achieve O&M expense savings?**

6  
7 A. Yes. The Companies assess their compliance options and consider the economic  
8 impacts of their options, including the timing and quantification of costs, both capital  
9 and expense; expense savings in labor, materials, and other categories; the ability to  
10 recover the costs through the ECR; and the internal rate of return for each option. The  
11 Companies' internal economic analyses are replete with discussion regarding O&M  
12 expense savings.

13  
14 **Q. Please describe your review of the Companies internal cost benefit analyses that**  
15 **describe the O&M expense savings associated with the capital costs of their 2002**  
16 **compliance plans.**

17  
18 A. The Companies provided numerous documents in response to Staff and KIUC  
19 discovery, some of which were provided on a confidential basis. The publicly available  
20 responses to the discovery indicate that there are net O&M expense savings for LG&E

1 projects 7, 8, 9, and 11. The Companies analyses indicate there are no anticipated O&M  
2 expense savings for LG&E project 10 or KU project 18. The following testimony is  
3 based upon the publicly available responses to discovery.  
4

5 **Q. Please describe the O&M expense savings on LG&E Project 7, Mill Creek wet**  
6 **stack conversion.**  
7

8 A. For Project 7, LG&E's internal economic analyses indicate annual O&M expense  
9 savings of \$176,000 in raw labor costs (without overhead loadings) and \$120,000 in  
10 materials costs. These internal economic analyses were provided and the savings  
11 quantified in response to Staff-1-8, KIUC-1-2, and KIUC-2-2. In the internal economic  
12 analyses provided in response to KIUC-1-2, LG&E stated on page 3 of 140 (Project 7)  
13 that "Option 2 (preferred) resolves the operating and environmental concerns and  
14 additionally provides heat rate improvements, reduced SO2 emissions, and labor savings  
15 necessary to meet our five year plan." On page 7 of 140, LG&E stated that "the  
16 economic savings that would result from the conversion of Mill Creek to wet stack  
17 configuration include heat rate improvements, reduced SO2 emissions, and O&M  
18 savings for reduced labor and material costs to maintain the stack plume reheat system."  
19 On page 60 of 140, LG&E stated that "removal of the reheater will allow the reduction  
20 of four operators. This is based on the assumption that one operator per shift can be

1 removed if all reheaters are removed.” On page 61 of 140, LG&E quantified the internal  
2 rate of return on this capital investment at 106.9% as compared to an after tax cost of  
3 capital of 7.93%. I have replicated relevant portions of the publicly available discovery  
4 responses as my Exhibit\_\_\_(LK-2).

5  
6 **Q. In its response to KIUC-2-2(b), LG&E preemptively argues that the \$120,000 in**  
7 **O&M material savings “is an avoided cost rather than current costs that will no**  
8 **longer be incurred.” Please respond.**

9  
10 A. Given the status quo in the absence of the capital investment in Project 7, LG&E’s  
11 internal economic analyses indicates that it would have incurred the \$120,000 in  
12 material costs to “maintain the stack plume reheat system” and “keeping the aging reheat  
13 systems and seal air systems operational.” In its analyses, the O&M savings were  
14 measured against the status quo, just as incremental capital costs and O&M expense  
15 increases were measured against the status quo. In that manner, an appropriate  
16 economic analysis compares the costs of maintaining the status quo against an  
17 alternative, in this case, the wet stack conversion.

18  
19 There is no evident distinction between “avoided costs” and those currently incurred that  
20 will no longer be incurred. By definition and consistent with the Companies’ internal

1 economic analyses, O&M savings are necessarily “avoided” costs because they no  
2 longer will be incurred once the capital investment is made and the project completed  
3 and placed into service.

4  
5 The Companies have argued in other proceedings that avoided costs are in fact savings.  
6 The Commission agreed with this position in its Orders in Case No. 97-300 approving  
7 the merger of the Companies and the merger savings surcredit mechanism and in Case  
8 No. 2001-169 approving the deferral and amortization of the workforce reduction costs  
9 and the VDT savings surcredit mechanism. In those proceedings, avoided costs were  
10 quantified as savings and flowed through in part to ratepayers net of the costs incurred to  
11 achieve those savings. In the same manner, the Commission should consider avoided  
12 O&M expense costs achieved through capital investment in new and additional  
13 pollution control projects as savings for purposes of the ECR surcharge mechanism.

14  
15 **Q. Where the Companies consider multiple compliance options, other than**  
16 **maintenance of the status quo, and they identify and select the least cost option,**  
17 **should the Commission consider as savings the costs avoided from not selecting a**  
18 **higher cost option?**

1 A. No. Such a result would impose a penalty on the Companies for the difference between  
2 the economic selection and the higher cost option. However, that situation is different  
3 than in the case of the status quo and the avoidance of ongoing O&M expense as the  
4 result of investment in new pollution control projects. In the latter case, recognition of  
5 the O&M expense savings does not impose a penalty on the Companies, but rather  
6 ensures that they do not receive recovery of the same costs twice, once through existing  
7 rates and then again through the ECR.

8  
9 **Q. Please describe the O&M expense savings on LG&E Project 8, refurbishment of**  
10 **electrostatic precipitators.**

11  
12 A. For Project 8, LG&E's internal economic analyses indicate annual O&M expense  
13 savings, but provide no quantification. These savings were addressed in response to  
14 Staff-1-8, KIUC-1-2, and KIUC-2-2. In the internal economic analyses provided in  
15 response to KIUC-1-2, LG&E stated on page 1 of 9 (Project 8) that "This work is  
16 necessary to return the precipitator to like new condition, and to meet air quality  
17 standards. New controls to improve efficiency are included as a part of this work along  
18 with other improvements to reduce maintenance and increase reliability." On page 2 of  
19 9, LG&E stated that "in recent years, maintenance costs have been increasing . . . to the

1 point where ongoing maintenance is not cost effective.” On page 6 of 9, LG&E stated  
2 that “some annual O&M benefits have been identified.”  
3

4 On page 8 of 9, LG&E stated that “We believe this project is absolutely necessary in  
5 order to maintain our commitments to reduce maintenance expense, maintain  
6 availability and meet current environmental regulations.” Known benefits were listed as  
7 “insure structural integrity, reduce frequency of section outages and derates due to  
8 component failures, improve performance of the precipitator, reduce fan horsepower due  
9 to air leakage, restore failed insulation, reduce flyash carryover to SDRS, reduce outage  
10 maintenance associated with precipitator internals, extend existing precipitator life, and  
11 continue on-going compliance with current air emissions standards.” I have replicated  
12 relevant portions of the publicly available discovery responses as my Exhibit\_\_\_(LK-3).  
13  
14

15 **Q. Did you request that LG&E quantify the O&M expense savings due to Project 8**  
16 **capital investment?**  
17

18 A. Yes. However, LG&E apparently could not do so. In response to KIUC-2-3(b), LG&E  
19 stated that “Precipitator maintenance costs are not tracked by FERC account and cannot

1 be identified. . . . Avoided O&M costs resulting from refurbishment are not  
2 ascertainable.”

3  
4 **Q. How do you recommend that the Commission proceed when the Companies are not**  
5 **able to or otherwise fail to quantify O&M expense savings associated with capital**  
6 **investment in new pollution control projects?**

7  
8 A. There are at least two alternatives. The Commission could ignore the O&M expense  
9 savings and allow the Companies to recover the capital costs through the ECR anyway.  
10 This is not an appropriate alternative because it allows the Companies to control whether  
11 O&M expense savings will be reflected in the ECR simply by refusing or otherwise  
12 failing to quantify the savings. It also is inappropriate because it inherently allows the  
13 double recovery of costs in existing rates and in the ECR, a result the Commission  
14 previously determined was not only inappropriate, but illegal.

15  
16 The second alternative is for the Commission to condition its approval of the  
17 Companies’ request for ECR recovery of the project capital costs on an appropriate and  
18 comprehensive quantification of the related O&M expense savings. This is an  
19 appropriate alternative because it allows the Commission, rather than the Companies, to  
20 control whether O&M savings are reflected as an offset to the capital costs.

1

2 **Q. How should the Commission proceed with respect to the Project 8 capital costs?**

3

4 A. Consistent with the preceding discussion, I recommend that the Commission condition  
5 ECR recovery for the Project 8 capital costs upon an appropriate and comprehensive  
6 quantification of the related O&M expense savings by LG&E.

7

8 **Q. Please address the issue of quantifying O&M savings when such savings are not**  
9 **specifically tracked, as argued by LG&E in its response to KIUC discovery.**

10

11 A. If savings are not specifically tracked or cannot otherwise be directly measured, then the  
12 Commission should utilize the Companies' own estimates of such savings relied upon  
13 for the purpose of their internal economic cost benefit analyses. The Companies rely  
14 upon these savings projections for their decision making. As such, there clearly is a self-  
15 interest in their accuracy and the Commission may reasonably rely upon those  
16 quantifications as a rebuttable presumption.

17

18 As a practical matter, it simply is more difficult to measure what is avoided and no  
19 longer incurred compared to what now is incurred. The Commission previously  
20 recognized this difficulty in Case No. 97-300, where it accepted projections of both

1 merger costs and savings for purposes of the Companies' merger surcredit mechanisms.  
2 The Commission subsequently relied upon these same cost and savings projections to  
3 quantify the reasonable costs for proforma merger savings expense adjustments in order  
4 to establish just and reasonable base rates for both Companies in Case Nos. 98-426, 98-  
5 474, 98-082, and 98-083.  
6

7 **Q. Please describe the O&M expense savings on LG&E Project 9, the Mill Creek FGD**  
8 **make-up water system restoration.**  
9

10 A. For Project 9, LG&E estimates annual O&M expense savings of \$55,000 to \$262, 000,  
11 offset by incremental O&M expense in every other year, starting at \$50,000 and rising to  
12 \$65,000 by the end of this decade. In response to KIUC-1-2 (Project 9), LG&E stated  
13 that "Power wash cleaning of FGD modules during outages will be reduced due to  
14 improved water quality and availability, O&M cost for "thickener" system maintenance  
15 (pump and tank) will be avoided, and O&M incremental cost for CWS pump  
16 maintenance will be incurred." I have replicated relevant portions of the publicly  
17 available discovery responses as my Exhibit\_\_\_\_(LK-4).  
18  
19

1   **Q.     Please describe the O&M expense savings on LG&E Project 11, FGD system**  
2       **enhancement.**

3  
4   A.     For Project 11, LG&E's internal economic analyses estimate annual O&M expense  
5       savings of \$900,000 after the initial year. In its response to KIUC-1-2, page 1 of 6  
6       Project 11, LG&E stated "Sulfur Dioxide Absorber Trays will be added to Mill Creek  
7       Units 3 & 4 scrubber modules during the spring 2000 Planned Outages to improve the  
8       efficiency of SO<sub>2</sub> removal. This improved process efficiency will allow the Dibasic  
9       Acid Feed System to be discontinued. This will save approximately \$900,000 per year."  
10      On page 2 of 6, LG&E stated that "the estimated direct cost of the project (for both  
11      units) is \$2.5 million. The annual O&M savings is \$900,000." The quantification of the  
12      initial year savings was provided in the confidential response to KIUC-2-2. I have  
13      replicated relevant portions of the publicly available discovery responses as my  
14      Exhibit\_\_\_\_(LK-5).

15  
16      In response to KIUC-2-3(h), LG&E stated that it had quantified the \$900,000 annual  
17      savings by "comparing the cost of scrubbing using 1999 DBA expenses and an 82%  
18      removal efficiency to the cost of scrubbing using 2001 DBA expenses and a 92%  
19      removal efficiency." In response to further questions for support of actual savings in  
20      that same discovery, LG&E stated that "No changes in FERC account charges exist to

1 demonstrate this savings. The experience to date on Mill Creek Units 3 and 4 support  
2 the original estimate of \$900,000 per year savings as outlined in part (i) above.” LG&E  
3 further stated that there was no documentation in support of its savings quantification  
4 other than that provided in response to Staff and KIUC discovery.  
5

6 **Q. Did the Companies’ internal economic cost benefit analyses indicate any O&M**  
7 **expense savings on KU project 18, Ghent ash pond dike elevation?**  
8

9 A. No. However, my testimony and recommendations regarding LG&E also are applicable  
10 to KU on future pollution control projects where there are O&M expense savings as the  
11 result of capital expenditures.  
12

13 **Q. Please summarize your recommendations regarding the O&M expense savings.**  
14

15 A. The O&M expense savings should be recognized as a reduction to the gross incremental  
16 costs of environmental compliance recovered through the ECR. The Commission is  
17 required to allow recovery of the reasonable costs to comply with environmental  
18 requirements, no more and no less. As the Commission has found in prior Orders, the  
19 reasonable costs to comply are the incremental costs less the costs in existing rates, or

1 the net costs recognizing savings. The Companies' internal economic analyses indicate  
2 O&M expense savings.

1 **IV. COST OF REMOVAL**

2

3 **Q. The Commission has required in prior ECR Orders that the costs of net plant that**  
4 **is retired and the related expenses recovered in existing rates be removed as an**  
5 **offset to the revenue requirement associated with new pollution control projects.**  
6 **Please describe the required accounting for the costs to remove the retired plant.**

7

8 A. The FERC USOA requires that the costs of removal be debited to the accumulated  
9 depreciation reserve, not included in the capitalized plant cost of the new pollution  
10 control projects. The depreciation rates for most utilities, including LG&E and KU,  
11 include an adjustment to reflect the net salvage cost (salvage proceeds less cost of  
12 removal) of assets upon retirement. Thus, the accumulated depreciation reserve includes  
13 not only the accumulated depreciation of the original capitalized plant cost, but also an  
14 accumulation amount to provide for the costs of removal, net of salvage proceeds.

15

16 **Q. Do the LG&E and KU projected capital costs for their 2002 compliance plans**  
17 **include costs of removal?**

18

19 A. They should not. However, certain of their internal economic analyses include removal  
20 costs in the projected capital costs. For example, the capital cost projected for LG&E

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1 project 8 includes \$800,000 of removal costs, according to LG&E's response to KIUC-  
2 1-2 Attachment page 1 of 9. I have replicated a copy of this page as my Exhibit \_\_\_\_ (LK-  
3 6).

4  
5 **Q. Should the Commission be concerned with whether the capital costs included in the**  
6 **ECR by the Companies include removal costs?**

7  
8 A. Yes. If the capital costs are overstated, then the ECR revenue requirement necessarily is  
9 overstated. To ensure that this does not occur, I recommend that the Commission direct  
10 the Companies to comply with the FERC USOA on this issue and not to include  
11 removal costs in the capitalized plant costs of new pollution control projects.

12  
13 **Q. Does this complete your testimony?**

14  
15 A. Yes.

**COMMONWEALTH OF KENTUCKY**  
**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

<b>THE APPLICATION OF KENTUCKY UTILITIES</b>	)	
<b>COMPANY FOR APPROVAL OF ITS 2002</b>	)	<b>CASE NO. 2002-00146</b>
<b>COMPLIANCE PLAN FOR RECOVERY BY</b>	)	
<b>ENVIRONMENTAL SURCHARGE</b>	)	

<b>THE APPLICATION OF LOUISVILLE GAS AND</b>	)	
<b>ELECTRIC COMPANY FOR APPROVAL OF ITS</b>	)	<b>CASE NO. 2002-00147</b>
<b>2002 COMPLIANCE PLAN FOR RECOVERY BY</b>	)	
<b>ENVIRONMENTAL SURCHARGE</b>	)	

**EXHIBITS**

**OF**

**LANE KOLLEN**

**ON BEHALF OF THE**  
**KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC.**

**J. KENNEDY AND ASSOCIATES, INC.**  
**ROSWELL, GEORGIA**

November 2002

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**EXHIBIT \_\_ (LK-1)**

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## **RESUME OF LANE KOLLEN, VICE PRESIDENT**

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### **EDUCATION**

**University of Toledo, BBA**  
Accounting

**University of Toledo, MBA**

### **PROFESSIONAL CERTIFICATIONS**

**Certified Public Accountant (CPA)**

**Certified Management Accountant (CMA)**

### **PROFESSIONAL AFFILIATIONS**

**American Institute of Certified Public Accountants**

**Georgia Society of Certified Public Accountants**

**Institute of Management Accountants**

More than twenty-five years of utility industry experience in the financial, rate, tax, and planning areas. Specialization in revenue requirements analyses, taxes, evaluation of rate and financial impacts of traditional and nontraditional ratemaking, utility mergers/acquisition diversification. Expertise in proprietary and nonproprietary software systems used by utilities for budgeting, rate case support and strategic and financial planning.

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**RESUME OF LANE KOLLEN, VICE PRESIDENT**

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**EXPERIENCE****1986 to**

**Present:** **J. Kennedy and Associates, Inc.:** Vice President and Principal. Responsible for utility stranded cost analysis, revenue requirements analysis, cash flow projections and solvency, financial and cash effects of traditional and nontraditional ratemaking, and research, speaking and writing on the effects of tax law changes. Testimony before Connecticut, Florida, Georgia, Indiana, Louisiana, Kentucky, Maine, Minnesota, North Carolina, Ohio, Pennsylvania, Tennessee, Texas, and West Virginia state regulatory commissions and the Federal Energy Regulatory Commission.

**1983 to**

**1986:** **Energy Management Associates:** Lead Consultant.  
Consulting in the areas of strategic and financial planning, traditional and nontraditional ratemaking, rate case support and testimony, diversification and generation expansion planning. Directed consulting and software development projects utilizing PROSCREEN II and ACUMEN proprietary software products. Utilized ACUMEN detailed corporate simulation system, PROSCREEN II strategic planning system and other custom developed software to support utility rate case filings including test year revenue requirements, rate base, operating income and pro-forma adjustments. Also utilized these software products for revenue simulation, budget preparation and cost-of-service analyses.

**1976 to**

**1983:** **The Toledo Edison Company:** Planning Supervisor.  
Responsible for financial planning activities including generation expansion planning, capital and expense budgeting, evaluation of tax law changes, rate case strategy and support and computerized financial modeling using proprietary and nonproprietary software products. Directed the modeling and evaluation of planning alternatives including:

Rate phase-ins.  
Construction project cancellations and write-offs.  
Construction project delays.  
Capacity swaps.  
Financing alternatives.  
Competitive pricing for off-system sales.  
Sale/leasebacks.

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## RESUME OF LANE KOLLEN, VICE PRESIDENT

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### CLIENTS SERVED

#### Industrial Companies and Groups

Air Products and Chemicals, Inc.	Lehigh Valley Power Committee
Airco Industrial Gases	Maryland Industrial Group
Alcan Aluminum	Multiple Intervenors (New York)
Armco Advanced Materials Co.	National Southwire
Armco Steel	North Carolina Industrial
Bethlehem Steel	Energy Consumers
Connecticut Industrial Energy Consumers	Occidental Chemical Corporation
ELCON	Ohio Industrial Energy Consumers
Enron Gas Pipeline Company	Ohio Manufacturers Association
Florida Industrial Power Users Group	Philadelphia Area Industrial Energy
General Electric Company	Users Group
GPU Industrial Intervenors	PSI Industrial Group
Indiana Industrial Group	Smith Cogeneration
Industrial Consumers for	Taconite Intervenors (Minnesota)
Fair Utility Rates - Indiana	West Penn Power Industrial Intervenors
Industrial Energy Consumers - Ohio	West Virginia Energy Users Group
Kentucky Industrial Utility Consumers	Westvaco Corporation
Kimberly-Clark	

#### Regulatory Commissions and Government Agencies

Georgia Public Service Commission Staff  
Kentucky Attorney General's Office, Division of Consumer Protection  
Louisiana Public Service Commission Staff  
Maine Office of Public Advocate  
New York State Energy Office  
Office of Public Utility Counsel (Texas)

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## RESUME OF LANE KOLLEN, VICE PRESIDENT

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### Utilities

Allegheny Power System  
Atlantic City Electric Company  
Carolina Power & Light Company  
Cleveland Electric Illuminating Company  
Delmarva Power & Light Company  
Duquesne Light Company  
General Public Utilities  
Georgia Power Company  
Middle South Services  
Nevada Power Company  
Niagara Mohawk Power Corporation

Otter Tail Power Company  
Pacific Gas & Electric Company  
Public Service Electric & Gas  
Public Service of Oklahoma  
Rochester Gas and Electric  
Savannah Electric & Power Company  
Seminole Electric Cooperative  
Southern California Edison  
Talquin Electric Cooperative  
Tampa Electric  
Texas Utilities  
Toledo Edison Company

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdct.	Party	Utility	Subject
10/86	U-17282 Interim	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Cash revenue requirements financial solvency.
11/86	U-17282 Interim Rebuttal	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Cash revenue requirements financial solvency.
12/86	9613	KY	Attorney General Div. of Consumer Protection	Big Rivers Electric Corp	Revenue requirements accounting adjustments financial workout plan.
1/87	U-17282 Interim	LA 19th Judicial District Ct	Louisiana Public Service Commission Staff	Gulf States Utilities	Cash revenue requirements, financial solvency.
3/87	General Order 236	WV	West Virginia Energy Users' Group	Monongahela Power Co	Tax Reform Act of 1986
4/87	U-17282 Prudence	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Prudence of River Bend 1, economic analyses, cancellation studies.
4/87	M-100 Sub 113	NC	North Carolina Industrial Energy Consumers	Duke Power Co.	Tax Reform Act of 1986.
5/87	86-524-E-	WV	West Virginia Energy Users' Group	Monongahela Power Co	Revenue requirements. Tax Reform Act of 1986.
5/87	U-17282 Case In Chief	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Revenue requirements, River Bend 1 phase-in plan, financial solvency.
7/87	U-17282 Case In Chief Surrebuttal	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Revenue requirements River Bend 1 phase-in plan, financial solvency.
7/87	U-17282 Prudence Surrebuttal	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Prudence of River Bend 1, economic analyses, cancellation studies.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdic.	Party	Utility	Subject
7/87	86-524 E-SC Rebuttal	WV	West Virginia Energy Users' Group	Monongahela Power Co	Revenue requirements, Tax Reform Act of 1986
8/87	9885	KY	Attorney General Div. of Consumer Protection	Big Rivers Electric Corp	Financial workout plan
8/87	E-015/GR- 87-223	MN	Taconite Intervenors	Minnesota Power & Light Co	Revenue requirements, O&M expense, Tax Reform Act of 1986.
10/87	870220-EI	FL	Occidental Chemical Corp	Florida Power Corp	Revenue requirements, O&M expense, Tax Reform Act of 1986.
11/87	87-07-01	CT	Connecticut Industrial Energy Consumers	Connecticut Light & Power Co	Tax Reform Act of 1986.
1/88	U-17282	LA 19th Judicial District Ct	Louisiana Public Service Commission Staff	Gulf States Utilities	Revenue requirements, River Bend 1 phase-in plan, rate of return
2/88	9934	KY	Kentucky Industrial Utility Customers	Louisville Gas & Electric Co	Economics of Trimble County completion.
2/88	10064	KY	Kentucky Industrial Utility Customers	Louisville Gas & Electric Co	Revenue requirements, O&M expense, capital structure, excess deferred income taxes
5/88	10217	KY	Alcan Aluminum National Southwire	Big Rivers Electric Corp	Financial workout plan. Corp.
5/88	M-87017 -1C001	PA	GPU Industrial Intervenors	Metropolitan Edison Co	Nonutility generator deferred cost recovery.
5/88	M-87017 -2C005	PA	GPU Industrial Intervenors	Pennsylvania Electric Co	Nonutility generator deferred cost recovery.
6/88	U-17282	LA 19th Judicial District Ct.	Louisiana Public Service Commission Staff	Gulf States Utilities	Prudence of River Bend 1 economic analyses, cancellation studies, financial modeling

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdct.	Party	Utility	Subject
7/88	M-87017- -1C001 Rebuttal	PA	GPU Industrial Intervenors	Metropolitan Edison Co	Nonutility generator deferred cost recovery, SFAS No. 92
7/88	M-87017- -2C005 Rebuttal	PA	GPU Industrial Intervenors	Pennsylvania Electric Co	Nonutility generator deferred cost recovery, SFAS No. 92
9/88	88-05-25	CT	Connecticut Industrial Energy Consumers	Connecticut Light & Power Co.	Excess deferred taxes, O&M expenses.
9/88	10064 Rehearing	KY	Kentucky Industrial Utility Customers	Louisville Gas & Electric Co	Premature retirements, interest expense.
10/88	88-170- EL-AIR	OH	Ohio Industrial Energy Consumers	Cleveland Electric Illuminating Co	Revenue requirements, phase-in, excess deferred taxes, O&M expenses, financial considerations, working capital.
10/88	88-171- EL-AIR	OH	Ohio Industrial Energy Consumers	Toledo Edison Co.	Revenue requirements, phase-in, excess deferred taxes, O&M expenses, financial Considerations, working capital
10/88	8800 355-EI	FL	Florida Industrial Power Users' Group	Florida Power & Light Co	Tax Reform Act of 1986, tax expenses, O&M expenses, pension expense (SFAS No. 87)
10/88	3780-U	GA	Georgia Public Service Commission Staff	Atlanta Gas Light Co.	Pension expense (SFAS No. 87).
11/88	U-17282 Remand	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Rate base exclusion plan (SFAS No. 71)
12/88	U-17970	LA	Louisiana Public Service Commission Staff	AT&T Communications of South Central States	Pension expense (SFAS No. 87).
12/88	U-17949 Rebuttal	LA	Louisiana Public Service Commission Staff	South Central Bell	Compensated absences (SFAS No. 43), pension expense (SFAS No. 87), Part 32, income tax normalization.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdic.	Party	Utility	Subject
2/89	U-17282 Phase II	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Revenue requirements, phase-in of River Bend 1, recovery of canceled plant
6/89	881602-EU 890326-EU	FL	Talquin Electric Cooperative	Talquin/City of Tallahassee	Economic analyses, incremental cost-of-service, average customer rates
7/89	U-17970	LA	Louisiana Public Service Commission Staff	AT&T Communications of South Central States	Pension expense (SFAS No. 87), compensated absences (SFAS No. 43), Part 32.
8/89	8555	TX	Occidental Chemical Corp.	Houston Lighting & Power Co.	Cancellation cost recovery, tax expense, revenue requirements
8/89	3840-U	GA	Georgia Public Service Commission Staff	Georgia Power Co.	Promotional practices, advertising, economic development
9/89	U-17282 Phase II Detailed	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Revenue requirements, detailed investigation.
10/89	8880	TX	Enron Gas Pipeline	Texas-New Mexico Power Co.	Deferred accounting treatment, sale/leaseback
10/89	8928	TX	Enron Gas Pipeline	Texas-New Mexico Power Co.	Revenue requirements, imputed capital structure, cash working capital
10/89	R-891364	PA	Philadelphia Area Industrial Energy Users Group	Philadelphia Electric Co.	Revenue requirements.
11/89 12/89	R-891364 Surrebuttal (2 Filings)	PA	Philadelphia Area Industrial Energy Users Group	Philadelphia Electric Co.	Revenue requirements, sale/leaseback.
1/90	U-17282 Phase II Detailed Rebuttal	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Revenue requirements detailed investigation.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdct.	Party	Utility	Subject
1/90	U-17282 Phase III	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Phase-in of River Bend 1, deregulated asset plan.
3/90	890319-EI	FL	Florida Industrial Power Users Group	Florida Power & Light Co	O&M expenses, Tax Reform Act of 1986
4/90	890319-EI Rebuttal	FL	Florida Industrial Power Users Group	Florida Power & Light Co	O&M expenses, Tax Reform Act of 1986.
4/90	U-17282	LA 19 <sup>th</sup> Judicial District Ct.	Louisiana Public Service Commission Staff	Gulf States Utilities	Fuel clause, gain on sale of utility assets.
9/90	90-158	KY	Kentucky Industrial Utility Customers	Louisville Gas & Electric Co.	Revenue requirements, post-test year additions, forecasted test year
12/90	U-17282 Phase IV	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Revenue requirements.
3/91	29327, et al.	NY	Multiple Intervenors	Niagara Mohawk Power Corp.	Incentive regulation.
5/91	9945	TX	Office of Public Utility Counsel of Texas	El Paso Electric Co.	Financial modeling, economic analyses, prudence of Palo Verde 3
9/91	P-910511 P-910512	PA	Allegheny Ludlum Corp., Armco Advanced Materials Co., The West Penn Power Industrial Users' Group	West Penn Power Co	Recovery of CAAA costs, least cost financing.
9/91	91-231 -E-NC	WV	West Virginia Energy Users Group	Monongahela Power Co.	Recovery of CAAA costs, least cost financing
11/91	U-17282	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Asset impairment, deregulated asset plan, revenue require- ments.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisd.	Party	Utility	Subject
12/91	91-410-EL-AIR	OH	Air Products and Chemicals, Inc., Armco Steel Co., General Electric Co., Industrial Energy Consumers	Cincinnati Gas & Electric Co	Revenue requirements, phase-in plan
12/91	10200	TX	Office of Public Utility Counsel of Texas	Texas-New Mexico Power Co	Financial integrity, strategic planning, declined business affiliations.
5/92	910890-EI	FL	Occidental Chemical Corp	Florida Power Corp	Revenue requirements, O&M expense, pension expense, OPEB expense, fossil dismantling, nuclear decommissioning.
8/92	R-00922314	PA	GPU Industrial Intervenor	Metropolitan Edison Co.	Incentive regulation, performance rewards, purchased power risk, OPEB expense
9/92	92-043	KY	Kentucky Industrial Utility Consumers	Generic Proceeding	OPEB expense
9/92	920324-EI	FL	Florida Industrial Power Users' Group	Tampa Electric Co.	OPEB expense.
9/92	39348	IN	Indiana Industrial Group	Generic Proceeding	OPEB expense
9/92	910840-PU	FL	Florida Industrial Power Users' Group	Generic Proceeding	OPEB expense
9/92	39314	IN	Industrial Consumers for Fair Utility Rates	Indiana Michigan Power Co	OPEB expense
11/92	U-19904	LA	Louisiana Public Service Commission Staff	Gulf States Utilities/Entergy Corp.	Merger.
11/92	8649	MD	Westvaco Corp., Eastalco Aluminum Co	Potomac Edison Co.	OPEB expense.
11/92	92-1715-AU-COI	OH	Ohio Manufacturers Association	Generic Proceeding	OPEB expense.
12/92	R-00922378	PA	Armco Advanced	West Penn Power Co.	Incentive regulation,

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdict.	Party	Utility	Subject
			Materials Co , The WPP Industrial Intervenors		performance rewards, purchased power risk, OPEB expense
12/92	U-19949	LA	Louisiana Public Service Commission Staff	South Central Bell	Affiliate transactions, cost allocations, merger
12/92	R-00922479	PA	Philadelphia Area Industrial Energy Users' Group	Philadelphia Electric Co	OPEB expense.
1/93	8487	MD	Maryland Industrial Group	Baltimore Gas & Electric Co., Bethlehem Steel Corp	OPEB expense, deferred fuel, CWIP in rate base
1/93	39498	IN	PSI Industrial Group	PSI Energy, Inc	Refunds due to over- collection of taxes on Marble Hill cancellation.
3/93	92-11-11	CT	Connecticut Industrial Energy Consumers	Connecticut Light & Power Co	OPEB expense.
3/93	U-19904 (Surrebuttal)	LA	Louisiana Public Service Commission Staff	Gulf States Utilities/Entergy	Merger.  Corp.
3/93	93-01 EL-EFC	OH	Ohio Industrial Energy Consumers	Ohio Power Co.	Affiliate transactions, fuel.
3/93	EC92- 21000 ER92-806-000	FERC	Louisiana Public Service Commission Staff	Gulf States Utilities/Entergy	Merger.  Corp.
4/93	92-1464- EL-AIR	OH	Air Products Armco Steel Industrial Energy Consumers	Cincinnati Gas & Electric Co	Revenue requirements, phase-in plan.
4/93	EC92- 21000 ER92-806-000 (Rebuttal)	FERC	Louisiana Public Service Commission Staff	Gulf States Utilities/Entergy	Merger.  Corp.
9/93	93-113	KY	Kentucky Industrial Utility Customers	Kentucky Utilities	Fuel clause and coal contract refund.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdct.	Party	Utility	Subject
9/93	92-490, 92-490A, 90-360-C	KY	Kentucky Industrial Utility Customers and Kentucky Attorney General	Big Rivers Electric Corp	Disallowances and restitution for excessive fuel costs, illegal and improper payments, recovery of mine closure costs
10/93	U-17735	LA	Louisiana Public Service Commission Staff	Cajun Electric Power Cooperative	Revenue requirements, debt restructuring agreement, River Bend cost recovery.
1/94	U-20647	LA	Louisiana Public Service Commission Staff	Gulf States Utilities Co	Audit and investigation into fuel clause costs.
4/94	U-20647 (Surrebuttal)	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Nuclear and fossil unit performance, fuel costs, fuel clause principles and guidelines.
5/94	U-20178	LA	Louisiana Public Service Commission Staff	Louisiana Power & Light Co	Planning and quantification issues of least cost integrated resource plan.
9/94	U-19904 Initial Post- Merger Earnings Review	LA	Louisiana Public Service Commission Staff	Gulf States Utilities Co	River Bend phase-in plan, deregulated asset plan, capital structure, other revenue requirement issues
9/94	U-17735	LA	Louisiana Public Service Commission Staff	Cajun Electric Power Cooperative	G&T cooperative ratemaking policies, exclusion of River Bend, other revenue requirement issues.
10/94	3905-U	GA	Georgia Public Service Commission Staff	Southern Bell Telephone Co.	Incentive rate plan, earnings review.
10/94	5258-U	GA	Georgia Public Service Commission Staff	Southern Bell Telephone Co	Alternative regulation, cost allocation.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdct.	Party	Utility	Subject
11/94	U-19904 Initial Post-Merger Earnings Review (Rebuttal)	LA	Louisiana Public Service Commission Staff	Gulf States Utilities Co	River Bend phase-in plan, deregulated asset plan, capital structure, other revenue requirement issues.
11/94	U-17735 (Rebuttal)	LA	Louisiana Public Service Commission Staff	Cajun Electric Power Cooperative	G&T cooperative ratemaking policy, exclusion of River Bend, other revenue requirement issues
4/95	R-00943271	PA	PP&L Industrial Customer Alliance	Pennsylvania Power & Light Co	Revenue requirements. Fossil dismantling, nuclear decommissioning
6/95	3905-U	GA	Georgia Public Service Commission	Southern Bell Telephone Co	Incentive regulation, affiliate transactions, revenue requirements, rate refund.
6/95	U-19904 (Direct)	LA	Louisiana Public Service Commission	Gulf States Utilities Co	Gas, coal, nuclear fuel costs, contract prudence, base/fuel realignment.
10/95	95-02614	TN	Tennessee Office of the Attorney General Consumer Advocate	BellSouth Telecommunications, Inc.	Affiliate transactions.
10/95	U-21485 (Direct)	LA	Louisiana Public Service Commission	Gulf States Utilities Co	Nuclear O&M, River Bend phase-in plan, base/fuel realignment, NOL and AltMin asset deferred taxes, other revenue requirement issues.
11/95	U-19904 (Surrebuttal)	LA	Louisiana Public Service Commission	Gulf States Utilities Co. Division	Gas, coal, nuclear fuel costs, contract prudence, base/fuel realignment
11/95	U-21485 (Supplemental Direct)	LA	Louisiana Public Service Commission	Gulf States Utilities Co	Nuclear O&M, River Bend phase-in plan, base/fuel realignment, NOL and AltMin asset deferred taxes, other revenue requirement issues.
12/95	U-21485 (Surrebuttal)				

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdct.	Party	Utility	Subject
1/96	95-299-EL-AIR 95-300-EL-AIR	OH	Industrial Energy Consumers	The Toledo Edison Co The Cleveland Electric Illuminating Co	Competition, asset writeoffs and revaluation, O&M expense, other revenue requirement issues
2/96	PUC No 14967	TX	Office of Public Utility Counsel	Central Power & Light	Nuclear decommissioning
5/96	95-485-LCS	NM	City of Las Cruces	El Paso Electric Co	Stranded cost recovery, municipalization.
7/96	8725	MD	The Maryland Industrial Group and Redland Genstar, Inc	Baltimore Gas & Electric Co , Potomac Electric Power Co. and Constellation Energy Corp.	Merger savings, tracking mechanism, earnings sharing plan, revenue requirement issues.
9/96 11/96	U-22092 U-22092 (Surrebuttal)	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc.	River Bend phase-in plan, base/fuel realignment, NOL and AltMin asset deferred taxes, other revenue requirement issues, allocation of regulated/nonregulated costs.
10/96	96-327	KY	Kentucky Industrial Utility Customers, Inc	Big Rivers Electric Corp	Environmental surcharge recoverable costs
2/97	R-00973877	PA	Philadelphia Area Industrial Energy Users Group	PECO Energy Co	Stranded cost recovery, regulatory assets and liabilities, intangible transition charge, revenue requirements.
3/97	96-489	KY	Kentucky Industrial Utility Customers, Inc	Kentucky Power Co	Environmental surcharge recoverable costs, system agreements, allowance inventory, jurisdictional allocation.
6/97	TO-97-397	MO	MCI Telecommunications Corp , Inc., MCImetro Access Transmission Services, Inc	Southwestern Bell Telephone Co	Price cap regulation, revenue requirements, rate of return.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisd.	Party	Utility	Subject
6/97	R-00973953	PA	Philadelphia Area Industrial Energy Users Group	PECO Energy Co	Restructuring, deregulation, stranded costs, regulatory assets, liabilities, nuclear and fossil decommissioning.
7/97	R-00973954	PA	PP&L Industrial Customer Alliance	Pennsylvania Power & Light Co.	Restructuring, deregulation, stranded costs, regulatory assets, liabilities, nuclear and fossil decommissioning.
7/97	U-22092	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc.	Depreciation rates and methodologies, River Bend phase-in plan.
8/97	97-300	KY	Kentucky Industrial Utility Customers, Inc.	Louisville Gas & Electric Co. and Kentucky Utilities Co.	Merger policy, cost savings, surcredit sharing mechanism, revenue requirements, rate of return.
8/97	R-00973954 (Surrebuttal)	PA	PP&L Industrial Customer Alliance	Pennsylvania Power & Light Co.	Restructuring, deregulation, stranded costs, regulatory assets, liabilities, nuclear and fossil decommissioning.
10/97	97-204	KY	Alcan Aluminum Corp Southwire Co.	Big Rivers Electric Corp	Restructuring, revenue requirements, reasonableness.
10/97	R-974008	PA	Metropolitan Edison Industrial Users Group	Metropolitan Edison Co	Restructuring, deregulation, stranded costs, regulatory assets, liabilities, nuclear and fossil decommissioning, revenue requirements.
10/97	R-974009	PA	Penelec Industrial Customer Alliance	Pennsylvania Electric Co	Restructuring, deregulation, stranded costs, regulatory assets, liabilities, nuclear and fossil decommissioning, revenue requirements.
11/97	97-204 (Rebuttal)	KY	Alcan Aluminum Corp Southwire Co.	Big Rivers Electric Corp	Restructuring, revenue requirements, reasonableness of rates, cost allocation.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdct.	Party	Utility	Subject
11/97	U-22491	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Allocation of regulated and nonregulated costs, other revenue requirement issues
11/97	R-00973953 (Surrebuttal)	PA	Philadelphia Area Industrial Energy Users Group	PECO Energy Co	Restructuring, deregulation, stranded costs, regulatory assets, liabilities, nuclear and fossil decommissioning
11/97	R-973981	PA	West Penn Power Industrial Intervenor	West Penn Power Co	Restructuring, deregulation, stranded costs, regulatory assets, liabilities, fossil decommissioning, revenue requirements, securitization
11/97	R-974104	PA	Duquesne Industrial Intervenor	Duquesne Light Co.	Restructuring, deregulation, stranded costs, regulatory assets, liabilities, nuclear and fossil decommissioning, revenue requirements, securitization.
12/97	R-973981 (Surrebuttal)	PA	West Penn Power Industrial Intervenor	West Penn Power Co	Restructuring, deregulation, stranded costs, regulatory assets, liabilities, fossil decommissioning, revenue requirements
12/97	R-974104 (Surrebuttal)	PA	Duquesne Industrial Intervenor	Duquesne Light Co	Restructuring, deregulation, stranded costs, regulatory assets, liabilities, nuclear and fossil decommissioning, revenue requirements, securitization.
1/98	U-22491 (Surrebuttal)	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc.	Allocation of regulated and nonregulated costs, other revenue requirement issues.
2/98	8774	MD	Westvaco	Potomac Edison Co	Merger of Duquesne, AE, customer safeguards, savings sharing.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdiction	Party	Utility	Subject
3/98	U-22092 (Allocated Stranded Cost Issues)	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc	Restructuring, stranded costs, regulatory assets, securitization, regulatory mitigation.
3/98	8390-U	GA	Georgia Natural Gas Group, Georgia Textile Manufacturers Assoc	Atlanta Gas Light Co.	Restructuring, unbundling, stranded costs, incentive regulation, revenue requirements
3/98	U-22092 (Allocated Stranded Cost Issues) (Surrebuttal)	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc	Restructuring, stranded costs, regulatory assets, securitization, regulatory mitigation
10/98	97-596	ME	Maine Office of the Public Advocate	Bangor Hydro- Electric Co	Restructuring, unbundling, stranded costs, T&D revenue requirements
10/98	9355-U	GA	Georgia Public Service Commission Adversary Staff	Georgia Power Co.	Affiliate transactions
10/98	U-17735	LA	Louisiana Public Service Commission Staff	Cajun Electric Power Cooperative	G&T cooperative ratemaking policy, other revenue requirement issues
11/98	U-23327	LA	Louisiana Public Service Commission Staff	SWEPCO, CSW and AEP	Merger policy, savings sharing mechanism, affiliate transaction conditions
12/98	U-23358 (Direct)	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc.	Allocation of regulated and nonregulated costs, tax issues, and other revenue requirement issues
12/98	98-577	ME	Maine Office of Public Advocate	Maine Public Service Co.	Restructuring, unbundling, stranded cost, T&D revenue requirements.
1/99	98-10-07	CT	Connecticut Industrial Energy Consumers	United Illuminating Co.	Stranded costs, investment tax credits, accumulated deferred income taxes, excess deferred income taxes.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

<b>Date</b>	<b>Case</b>	<b>Jurisdct.</b>	<b>Party</b>	<b>Utility</b>	<b>Subject</b>
3/99	U-23358 (Surrebuttal)	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc	Allocation of regulated and nonregulated costs, tax issues, and other revenue requirement issues.
3/99	98-474	KY	Kentucky Industrial Utility Customers	Louisville Gas and Electric Co	Revenue requirements, alternative forms of regulation.
3/99	98-426	KY	Kentucky Industrial Utility Customers	Kentucky Utilities Co.	Revenue requirements, alternative forms of regulation.
3/99	99-082	KY	Kentucky Industrial Utility Customers	Louisville Gas and Electric Co	Revenue requirements
3/99	99-083	KY	Kentucky Industrial Utility Customers	Kentucky Utilities Co.	Revenue requirements.
4/99	U-23358 (Supplemental Surrebuttal)	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc.	Allocation of regulated and nonregulated costs, tax issues, and other revenue requirement issues.
4/99	99-03-04	CT	Connecticut Industrial Energy Consumers mechanisms	United Illuminating Co	Regulatory assets and liabilities, stranded costs, recovery
4/99	99-02-05	CT	Connecticut Industrial Utility Customers mechanisms	Connecticut Light and Power Co	Regulatory assets and liabilities stranded costs, recovery
5/99	98-426 99-082 (Additional Direct)	KY	Kentucky Industrial Utility Customers	Louisville Gas and Electric Co.	Revenue requirements
5/99	98-474 99-083 (Additional Direct)	KY	Kentucky Industrial Utility Customers	Kentucky Utilities Co.	Revenue requirements
5/99	98-426 98-474 (Response to Amended Applications)	KY	Kentucky Industrial Utility Customers Kentucky Utilities Co.	Louisville Gas and Electric Co. and	Alternative regulation.
6/99	97-596	ME	Maine Office of	Bangor Hydro-	Request for accounting

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdiction	Party	Utility	Subject
			Public Advocate	Electric Co	order regarding electric industry restructuring costs.
6/99	U-23358	LA	Louisiana Public Public Service Comm Staff	Entergy Gulf States, Inc	Affiliate transactions, cost allocations
7/99	99-03-35	CT	Connecticut Industrial Energy Consumers	United Illuminating Co	Stranded costs, regulatory assets, tax effects of asset divestiture.
7/99	U-23327	LA	Louisiana Public Service Commission Staff	Southwestern Electric Power Co., Central and South West Corp, and American Electric Power Co	Merger Settlement Stipulation.
7/99	97-596 (Surrebuttal)	ME	Maine Office of Public Advocate	Bangor Hydro-Electric Co.	Restructuring, unbundling, stranded cost, T&D revenue requirements.
7/99	98-0452-E-GI	WVa	West Virginia Energy Users Group	Monongahela Power, Potomac Edison, Appalachian Power, Wheeling Power	Regulatory assets and liabilities.
8/99	98-577 (Surrebuttal)	ME	Maine Office of Public Advocate	Maine Public Service Co.	Restructuring, unbundling, stranded costs, T&D revenue requirements
8/99	98-426 99-082 (Rebuttal)	KY	Kentucky Industrial Utility Customers	Kentucky Utilities Co	Revenue requirements.
8/99	98-474 98-083 (Rebuttal)	KY	Kentucky Industrial Utility Customers Kentucky Utilities Co	Louisville Gas and Electric Co and	Alternative forms of regulation.
8/99	98-0452-E-GI (Rebuttal)	WVa	West Virginia Energy Users Group	Monongahela Power, Potomac Edison, Appalachian Power, Wheeling Power	Regulatory assets and liabilities.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisd.	Party	Utility	Subject
10/99	U-24182 (Direct)	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc	Allocation of regulated and nonregulated costs, affiliate transactions, tax issues, and other revenue requirement issues
11/99	21527	TX	Dallas-Ft Worth Hospital Council and Coalition of Independent Colleges and Universities	TXU Electric	Restructuring, stranded costs, taxes, securitization.
11/99	U-23358 Surrebuttal Affiliate Transactions Review	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc	Service company affiliate transaction costs
04/00	99-1212-EL-ETPOH 99-1213-EL-ATA 99-1214-EL-AAM		Greater Cleveland Growth Association	First Energy (Cleveland Electric Illuminating, Toledo Edison)	Historical review, stranded costs, regulatory assets, liabilities.
01/00	U-24182 (Surrebuttal)	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc.	Allocation of regulated and nonregulated costs, affiliate transactions, tax issues, and other revenue requirement issues
05/00	U-24182 (Supplemental Direct)	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc	Affiliate expense proforma adjustments.
05/00	A-110550F0147 PA		Philadelphia Area Industrial Energy Users Group	PECO Energy	Merger between PECO and Unicom
07/00	22344	TX	The Dallas-Fort Worth Hospital Council and The  Coalition of Independent Colleges and Universities	Statewide Generic Proceeding	Escalation of O&M expenses for unbundled T&D revenue requirements In projected test year.
08/00	U-24064	LA	Louisiana Public Service Commission Staff	CLECO	Affiliate transaction pricing ratemaking principles, subsidization of nonregulated affiliates, ratemaking adjustments

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdic.	Party	Utility	Subject
11/00	PUC 22350 SOAH 473-00-1015	TX	The Dallas-Ft. Worth Hospital Council and The Coalition of Independent Colleges And Universities	TXU Electric Co	Restructuring, T&D revenue requirements, mitigation, regulatory assets and liabilities
10/00	R-00974104 (Affidavit)	PA	Duquesne Industrial Intervenors	Duquesne Light Co	Final accounting for stranded costs, including treatment of auction proceeds, taxes, capital costs, switchback costs, and excess pension funding.
11/00	P-00001837 R-00974008 P-00001838 R-00974009		Metropolitan Edison Industrial Users Group Penelec Industrial Customer Alliance	Metropolitan Edison Co Pennsylvania Electric Co	Final accounting for stranded costs, including treatment of auction proceeds, taxes, regulatory assets and liabilities, transaction costs
12/00	U-21453, LA U-20925, U-22092 (Subdocket C) (Surrebuttal)		Louisiana Public Service Commission Staff	SWEPCO	Stranded costs, regulatory assets.
01/01	U-24993 (Direct)		Louisiana Public Service Commission Staff	Entergy Gulf States, Inc	Allocation of regulated and nonregulated costs, tax issues, and other revenue requirement issues
01/01	U-21453, U-20925 and U-22092 (Subdocket B) (Surrebuttal)		Louisiana Public Service Commission Staff	Entergy Gulf States, Inc.	Industry restructuring, business separation plan, organization structure, hold harmless conditions, financing.
01/01	Case No. KY 2000-386		Kentucky Industrial Utility Customers, Inc	Louisville Gas & Electric Co	Recovery of environmental costs, surcharge mechanism.
01/01	Case No. KY 2000-439		Kentucky Industrial Utility Customers, Inc	Kentucky Utilities Co.	Recovery of environmental costs, surcharge mechanism.
02/01	A-110300F0095 PA A-110400F0040		Met-Ed Industrial Users Group Penelec Industrial Customer Alliance	GPU, Inc. FirstEnergy	Merger, savings, reliability.

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

Date	Case	Jurisdic.	Party	Utility	Subject
03/01	P-00001860 P-00001861	PA	Met-Ed Industrial Users Group Penelec Industrial Customer Alliance	Metropolitan Edison Co. and Pennsylvania Electric Co	Recovery of costs due to provider of last resort obligation
04 /01	U-21453, U-20925, U-22092 (Subdocket B) Settlement Term Sheet	LA	Louisiana Public Public Service Comm Staff	Entergy Gulf States, Inc	Business separation plan settlement agreement on overall plan structure.
04 /01	U-21453, U-20925, U-22092 (Subdocket B) Contested Issues	LA	Louisiana Public Public Service Comm Staff	Entergy Gulf States, Inc	Business separation plan agreements, hold harmless conditions, separations methodology.
05 /01	U-21453, U-20925, U-22092 (Subdocket B) Contested Issues Transmission and Distribution (Rebuttal)	LA	Louisiana Public Public Service Comm Staff	Entergy Gulf States, Inc	Business separation plan: agreements, hold harmless conditions, Separations methodology
07/01	U-21453, U-20925, U-22092 (Subdocket B) Transmission and Distribution Term Sheet	LA	Louisiana Public Public Service Comm Staff	Entergy Gulf States, Inc	Business separation plan: settlement agreement on T&D issues, agreements necessary to implement T&D separations, hold harmless conditions, separations methodology
10/01	14000-U	GA	Georgia Public Service Commission Adversary Staff	Georgia Power Co.	Review requirements, Rate Plan, fuel clause recovery.
11/01 (Direct)	14311-U	GA	Georgia Public Service Commission Adversary Staff	Atlanta Gas Light Co	Revenue requirements, revenue forecast, O&M expense, depreciation, plant additions, cash working capital
11/01 (Direct)	U-25687	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc	Revenue requirements, capital structure, allocation of regulated and nonregulated costs, River Bend uprate

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**Expert Testimony Appearances  
of  
Lane Kollen  
As of November 2002**

<b>Date</b>	<b>Case</b>	<b>Jurisdic.</b>	<b>Party</b>	<b>Utility</b>	<b>Subject</b>
02/02	25230	TX	Dallas Ft -Worth Hospital Council & the Coalition of Independent Colleges & Universities	TXU Electric	Stipulation. Regulatory assets, securitization financing
02/02 (Surrebuttal)	U-25687	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc	Revenue requirements, corporate franchise tax, conversion to LLC, River Bend uprate.
03/02 (Rebuttal)	14311-U	GA	Georgia Public Service Commission Adversary Staff	Atlanta Gas Light Co	Revenue requirements, earnings sharing plan, service quality standards
03/02	001148-EI	FL	South Florida Hospital and Healthcare Assoc	Florida Power & Light Co.	Revenue requirements. Nuclear life extension, storm damage accruals and reserve, capital structure, O&M expense
04/02 (Supplemental Surrebuttal)	U-25687	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc	Revenue requirements, corporate franchise tax, conversion to LLC, River Bend uprate
04/02	U-21453, U-20925 and U-22092 (Subdocket C)		Louisiana Public Service Commission Staff	SWEPCO	Business separation plan, T&D Term Sheet, separations methodologies, hold harmless conditions.
08/02	EL01-88-000	FERC	Louisiana Public Service Commission Statt	Entergy Services, Inc and The Entergy Operating Companies	System Agreement, production cost equalization tariffs
08/02	U-25888	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc and Entergy Louisiana, Inc	System Agreement, production cost disparities, prudence
09/02	2002-00224 2002-00225	KY	Kentucky Industrial Utilities Customers, Inc	Kentucky Utilities Co Louisville Gas & Electric Co	Fuel clause recovery of line losses associated with off-system sales

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**EXHIBIT \_\_ (LK-2)**

**002947**

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to First Set of Data Requests of KIUC Dated September 6, 2002**

**Case No. 2002-00147**

**Question No. 2**

**Witness: Lonnie E. Bellar**

- Q-2. Please provide all documents, memoranda, and correspondence which address the cost effectiveness of the new and additional pollution control facilities in your amended compliance plan.
- A-2. For LG&E Project 7, please see the response to PSC Question No. 8. For the remaining projects, please see the attachment.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2002-00147**

**Response to First Data Request of Commission Staff dated September 10, 2002**

**Question No. 8**

**Responding Witness: Lonnie E. Bellar**

- Q-8. Refer to the Bellar Direct Testimony, page 6. Mr. Bellar states that conversion to wet stack liners is the most reasonable and cost-effective process for LG&E to comply with the Jefferson County Air Board's mandate to resolve the problems caused by the original stack design.
- a. Given the configuration of LG&E's generating units, list the alternatives available to LG&E to deal with the stack design problems.
  - b. Provide the analysis that supports LG&E's claim that the conversion to wet stack liners is the most cost-effective alternative.
- A-8. a. Three alternatives were considered:
- 1. Replacement of the existing reheaters and relining of the existing stacks
  - 2. Removal of the reheaters and replacement with wet stack technology
  - 3. Conversion as in alternative 2 with reduced scope (utilize existing nozzles)
- b. Please refer to the attached document.

One Quality Street Lexington, KY 40507-1462 Tel 606 367-1164 Fax 606 367-1199 james.ellington@kuenergy.com

James J. Ellington, Vice President



Kentucky  
Utilities  
Company

**Memo**

November 20, 2000

V. A. Staffieri  
LGE-14

**Mill Creek Wet Stack Conversions**

Vic,

Reasons for work:

- The present arrangement causes problems with the neighboring Valley Village subdivision.
- These modifications eliminate the stack plume reheaters (approximately \$3.5M/each or \$14M for the station).
- The modifications also improve availability, efficiency, and reduce NOx and SOx emissions.

The scope of work will be completed in 2001 on MC 2 and 4, and in 2002 on Mill Creek units 1 and 3. The work scope includes lining the upper section of the stack flues, modifying the lower sections, removal of the stack plume reheaters, and installation of scrubber trays in Mill Creek units 1 and 2.

Power Technology has evaluated the merits and scope of the project. Their support is described by a letter from Tony Howard in Section 4.

The initial gap of \$1.8M in total project cost has been eliminated by changes in project scope and adjustments in other projects. The Mill Creek capital budget has \$19.8M designated to fund the work over the next two years.

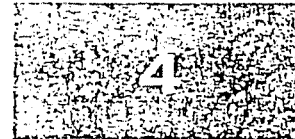
jmc

# Table of Contents

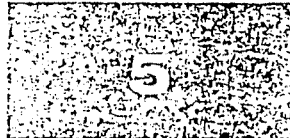
## Financial Summary

## Project Scope Executive Summary

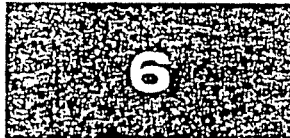
## Detailed Project Scope



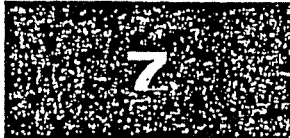
### Power Technology Recommendation



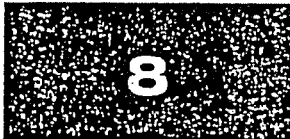
### ACE's



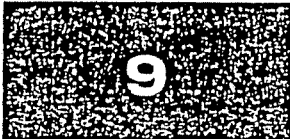
### Award Recommendations



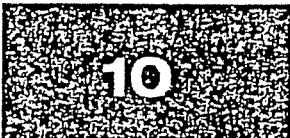
### Industry Analysis



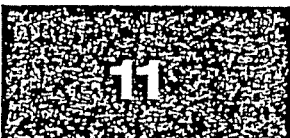
### Liquid Discharge Modeling



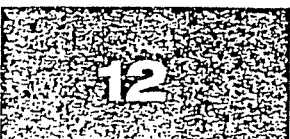
### NAAQS SO<sub>2</sub> Modeling



### Financial Analysis



### Babcock & Wilcox Contract



### ZBD Contract

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## Mill Creek Wet Stack Capital Investment Proposal Financial Summary

Due to the progressive failures of the existing Stack Plume Reheaters (SPR's) across all four Mill Creek Generating Units, the following summary identifies potential options, which increase operating efficiency and mitigate present and future environmental concerns. The following options were evaluated:

- Option 1** - replace stack plume reheater with like-kind equipment and line the stack with nickel alloy
- Option 2** - complete conversion to wet stack operation
- Option 3** - conversion to wet stack with a reduced scope (elimination of nozzle changes for increased efficiency)

Summary for the aforementioned options are identified below.

Model Run	Capital (\$000)	NPV (\$000)@ 7.93%	IRR	Payback (Yrs.)
1) Reheat + Liner	\$15,700	(\$13,145)	N/A	N/A
1A) Reheat + Liner + 15% cost	\$15,700	(\$15,031)	N/A	N/A
2) All units w/ Heat Rate Improvement (HR)	\$19,800	\$22,032	134.7%	2.4
2A) All units w/o HR	\$19,800	\$5,570	34.3%	5.4
2B) All units w/ HR + 15%	\$19,800	\$19,671	59.2%	3.5
2C) All units w/o HR + 15%	\$19,800	\$3,312	16.7%	9.6
3) Change in analysis with reduced scope	(\$240)	(\$2,000)	N/A	N/A

Option 1 provides the least capital expenditures, although fails to provide the operating efficiencies and thus forces the project return negative. Option 2 (preferred) resolves the operating and environmental concerns and additionally provides heat rate improvements, reduced SO2 emissions, and labor savings necessary to meet our five year plan. Option 3, although reduces capital needs by \$240k, forces the NPV down by \$2 MM.

Approval is being requested for \$19.8MM to covert all four units to wet stack operation as proposed in Option2. This project is fully funded in the 2001 proposed Capital budget. In order for the plant to meet this proposal, obsolete equipment will be abandoned in place (removal of this equipment is at an additional cost of \$230K per unit).

Due to the environmental nature of this project, all four projects are being submitted as one comprehensive project. The LG&E Environmental Group strongly believes that the Jefferson County Air Pollution Control Board or other regulatory agencies will recommend the Plant address all four units. Additionally, Mr. Tony Howard of Power Technology and his engineering team have reviewed the proposals and are in agreement with the recommended option. The summary of their analysis is Tab 4 of this report.

Note: Detailed project proposal and associated financial analysis are included in Tab 10.

such as C-276. The use of "wall-paper" lining would also minimize liquid deposition and re-entrainment.

- Removal of the reheater will increase thermal efficiency of the units, reduce FGD plant operating costs and avoid capital expenditures for reheat refurbishment. This project covers a major initiative discussed in the "Quick Wins" evaluation for the Mill Creek Station.

#### Environmental Modeling

- Liquid discharge modeling was conducted by Power Technology to evaluate droplet fallout along the stack plume (see attached report in tab 8).
- National Ambient Air Quality Standards (NAAQS) modeling was conducted to verify that the 3-hour SO<sub>2</sub> emission limits would not be violated by the conversion (see attached summary in tab 9).

#### Economic Justification:

The economic savings that would result from the conversion of Mill Creek to a wet stack configuration include heat rate improvements, reduced SO<sub>2</sub> emissions, and O & M savings for reduced labor and material costs to maintain the stack plume reheat system. All savings have been incorporated into the station 5-year plan.

SO<sub>2</sub> Credit Savings (Additional information to explain the recommended option mentioned in the financial summary)

Installation of the absorption tray will increase SO<sub>2</sub> removal efficiency on Mill Creek 1 and 2 from 88.7% to 90%. The installation of new nozzles in conjunction with the new tray will increase removal to 92%. This will create a SO<sub>2</sub> savings of 752 tons for the tray and 1800 tons for the tray and nozzles. Assuming the price for a ton credit is \$150, addition of the tray will provide annual savings of \$113,000 and with nozzles the savings would be \$270,000.

#### Additional Benefits

- Availability of equipment – Wet stacks should eliminate the potential for reheat fouling as well as the continual (daily) hydrocyclone pluggage issues on MC3 and MC4. Plugged hydrocyclones affect the quantity and purity of the gypsum shipped offsite and the frequency of trench cleaning.
- Generation improvements – When key unit assets (pulverizers, pumps, etc.) are not available the unit is derated. The additional steam not used in the SPR can be utilized to reduce the effect of the derate.
- The conversion to wet stack technology will eliminate the discharge of slurry and rust flakes during transient operating conditions.

## AUTHORIZATION FOR CAPITAL EXPENDITURE

☐ LG&E Energy Corp.  
☒ Louisville Gas & Electric Co.  
☐ Kentucky Utilities Company

☐ LEM  
☐ Non-Utility Pwr Gen  
☐ WKEC

☐ Other \_\_\_\_\_

Name of Project		Mill Creek Wet Stack Conversion			
Budgeting Section	Project Number	Related Project Number (s)		Task Number(s)	
Budget Ref.	TBD			Investment	Retirement
Budget Check				TBD	TBD
Date Approved	Date Requested	Estimated Start Date	Estimated Completion Date	Environmental Code	Environmental Category
	11/16/2000	3/5/2001	4/30/2001		
Budgeted	Product Code	Resp. Center	Location	Category	Code
Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	111	2400	MC 2		
O & M Savings	Project Manager			Project Manager Phone	
Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Don Hammack			933-6622	

## REASONS FOR AND DESCRIPTION OF PROJECT

The Stack Plume Reheater (SPR) is nearing the end of its useful life, and is experiencing an increase in tube leaks. The existing mild steel stack liner has corroded and is coated with slurry sludge due to inefficient FGD operation. This process is environmentally necessary. This project proposes a process change instead of a like-kind equipment replacement as has been done in the past. This project changes the Mill Creek units from a Dry Stack process to a Wet Stack process which is more efficient.

Costs	Investment	Retirement	Total Capital Expenditures	Maintenance (Not Required)	Total Project Expenditures
Company Labor					
Contract Labor					
Materials					
Other (Total Contract Cost)	4,928,746		4,928,746		4,928,746
Rights of Way					
Less Salvage					
Local Engineering and G&A (5%)	246,437		246,437		246,437
Sub Total	5,175,183		5,175,183		5,175,183
Contribution In Aid of Construction (CIAC)	0				
Net Capital Expenditures	5,175,183		5,175,183		5,175,183

Sketch No.	Prepared by	Date	Checked by	Date	Checked by	Date	Checked by	Date

Signature Required (Based on Total Capital Expenditures -&gt; Net Cost to Company) :

Authorized by	Signature	Date
1. Supervisor/Team Leader (up to \$25,000)		
2. Manager (\$25,001 to \$100,000)		
3. Director (\$100,001 to \$300,000)		
4. Forecasting & Budgeting (\$300,000 and up)		
5. Officer (\$300,001 to \$1,000,000)		
6. Exec VP/Company President (\$1,000,001 to \$2,000,000)		
CFO (>\$2,000,000)		
Energy Corp. President/COO (\$2,000,001 to \$3,000,000)		
9. Chairman/CEO (>\$3,000,000)		
10. Information Technology (Required for IT Projects)		
11. Property Accounting/Division Controller		

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3. All components of the wet stack conversion must be completed.
4. All four stacks must be converted because of environmental concerns.

A financial model was run for each of the 3 options listed above. Two sensitivities were run on each option; one increasing the capital cost by 15%, and one removing the benefit for heat rate improvement. The results of the financial analysis are summarized in the table below.

Model Run	Capital (\$000)	NPV (\$000)@ 7.93%	IRR	Payback (Yrs.)
1) Reheat + Liner	\$15,700	(\$13,145)	N/A	N/A
1A) Reheat + Liner + 15%	\$15,700	(\$15,031)	N/A	N/A
2) All units w/ HR	\$19,800	\$22,032	134.7%	2.4
2A) All units w/o HR	\$19,800	\$5,570	34.3%	5.4
2B) All units w/ HR + 15%	\$19,800	\$19,671	59.2%	3.5
2C) All units w/o HR + 15%	\$19,800	\$3,312	16.7%	9.6
3) Change in analysis with reduced scope	(\$240)	(\$2,000)	106.9%	2.2

Model Assumptions:

- SO<sub>2</sub> credits are worth \$150/ton forward (current cost)
- NO<sub>x</sub> credits are worth \$2,500/ton forward
- NO<sub>x</sub> emission rate .26 #/MMBTU
- Limestone cost \$5.10/ton forward (current cost)
- The absorption tray meets the 90% guarantee and the nozzles meet the 92% guarantee
- Removal of the reheater will allow reduction of four operators. This is based on the assumption that one operator per shift can be removed if all reheaters are removed. This labor savings was already included in the 5-year plan.
- Current five year generation forecast remains constant
- Fuel costs are level after year five
- Current maintenance costs are adequate to maintain the existing steam supply system
- Existing steam supply system will need capital upgrades in 10 years
- Reheater life is 15 years
- Current reheater will last until 2002

The price for each component can be separated. This will allow the wet stack portion to possibly be an Environmental Cost Recovery project in the future. The price associated with the wet stack conversion alone is \$18MM. Should the wet stack portion be considered as an ECR project, the revenue streams will predominately offset the fuel savings should the company not be allowed to receive the fuel savings. This was not considered in the financial analysis, but would only serve to make this project more attractive from the company's perspective.

Louisville Gas & Electric Company  
Financial Summary  
Mill Creek Wet Stack Conversion (Nozzles)

<b>Project Number:</b> 0	<b>Department:</b> Mechanical Maintenance
<b>Project Description:</b>	<b>Location:</b> Mill Creek
The project includes: 'wallpapering' the existing stack with C276 material, enlarging the bottom 93' of the liner to 22' Dia., modifying the existing breeching configuration, installation of a new liquid collection system, absorption tray and new nozzles.	
<i>The key contact is: Don Hammack @ 933-6622</i>	

Incremental Cost of Capital	7.93%	This project is budgeted.					
<b>Project Parameters:</b>							
First year of capital expenses	2001	This project will not need an IT Signature.					
In-service year	2002						
Analysis period	16	This project will not need FP&B signature. Please forward to Property Accounting BOC03.					
<b>Capital Request:</b>							
Total capital expenditure (\$000)	\$127	The ACE for this project will require approval up to: Director level					
<b>Cash Flow Analysis:</b>							
NPV Cash Flows (\$000) @ 7.93%	\$1,018						
Internal Rate of Return (IRR)	106.9%						
Discounted Payback (Years)	2.2						
<b>Earnings Analysis - First Five Years</b>	<b>Total</b>						
	<b>01-05</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	
Net Income Book Basis (\$000)	\$525	\$0	\$133	\$127	\$132	\$132	
Earnings Per Share (\$) <sup>1</sup>	0.001	0.000	0.001	0.001	0.001	0.001	
Net Income Tax Basis (\$000)	\$515	\$0	\$131	\$124	\$130	\$130	
Earnings Per Share (\$)	0.004	0.000	0.001	0.001	0.001	0.001	

**Notes:**

1. The 01-05 Earnings Per Share is the average annual EPS for the five-year period.

**EXHIBIT \_\_ (LK-3)**

**002957**

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to First Set of Data Requests of KIUC Dated September 6, 2002**

**Case No. 2002-00147**

**Question No. 2**

**Witness: Lonnie E. Bellar**

- Q-2. Please provide all documents, memoranda, and correspondence which address the cost effectiveness of the new and additional pollution control facilities in your amended compliance plan.
- A-2. For LG&E Project 7, please see the response to PSC Question No. 8. For the remaining projects, please see the attachment.

# **Project No. 8**

## ALLOCATION FOR CAPITAL EXPENDITURE

LG&E Energy Corp.		RAS	Budget Ref.		Project Number
Louisville Gas & Electric Co.		X Non-Utility Pwr Gen	101299		101299
Kentucky Utilities		WKEC	Construction Task		Retirement Task
LEM		Other:	11A		51B
Location or Plant			Acct No. (If WO N/A):		
MILL CREEK GENERATING STATION			Date Requested: Feb. 11, 2000		
Name of Project			Work To Start: June 1, 2000		
MC2 - Refurbish Electrostatic Precipitator			To Be Completed: Dec. 31, 2001		
Responsible Group: 232		Dept. No.:	Budget Check		Date Approved
Class. Category:		Class. Code:	Product Code:		
REASONS FOR AND DESCRIPTION OF PROJECT					
Authority is requested to cover the cost of refurbishing the electrostatic precipitator on Mill Creek Unit 2. This work is necessary to return the precipitator to like new condition, and to meet air quality standards. New controls to improve efficiency are included as a part of this work along with other improvements to reduce maintenance and increase reliability.					
Authority requested for year 2000 --- \$ 200,000.00					
Authority requested for year 2001 --- \$ 3,400,000.00					
Total authority requested --- \$ 3,600,000.00					
ESTIMATED CUSTOMER COSTS (Utility Only)			ESTIMATED COMPANY COSTS		
Constr. & Rem. Costs	\$	New Construction/Purchase Costs	\$	2,800,000.00	
Oper & Maint Costs	\$	Add -- Removal Costs	\$	800,000.00	
Associated Costs	\$	Deduct -- Salvage			
Subtotal	\$	Budget Cost - Subtotal	\$	3,600,000.00	
Deduct -- Salvage	\$	Local Engineering (Utility)	\$	93,000.00	
		Sales Tax			
Estimated Total Costs	\$	Est. Net Capital Expenditure	\$	3,693,000.00	
Estimated Original Cost of Asset to be Retired					
Prepared By: R. C. Kittle			Checked By:		
See Sketch No.			Tax District: South Dixie Fire District (047)		
Signature Required (Based on Total Cost of Project) Please route in order checked:					
Supervisor/Team Leader (up to \$25,000):					
Manager (\$25,001 to \$100,000):					
Director (\$100,001 to \$300,000):					
Forecasting & Budgeting (\$300,000 & Up):					
Officer (\$300,001 to \$1,000,000):					
Exec VP/Company President (>\$1,000,001 to \$2,000,000):					
CFO (>\$2,000,000):					
Vice Chairman/COO (>\$2,000,000 to \$3,000,000):					
Chairman/CEO (>\$3,000,000):					
Information Technology (REQUIRED FOR IT PROJECTS):					
Property Accounting/Division Controller:					

Wholesale Electric Business  
Capital Project Request

**Refurbish Electrostatic Precipitator, Mill Creek Unit 2**

*Project No.* 101299      *2000 Estimate:* \$ 200,000      *Total Estimate:* \$ 3,600,000

**CORPORATE GOALS SUPPORTED:** This project supports the corporate goals of reliability improvement and environmental compliance.

**PROPOSAL:** The objective of this project is to restore the structural integrity of the precipitator and to assure that the performance meets the original design efficiency. The scope includes the following:

- Replace all collecting plates.
- Replace existing wire electrodes with new rigid electrodes.
- Replace existing transformer/rectifiers with new T/R – CLR units.
- Replace transformer/rectifier and rapper controls with microprocessor controls compatible with the existing energy optimization system.
- Add ash hopper high level alarms.
- Replace corroded hot roof with new roof and insulation.
- Replace corroded structural members as required.
- Replace sections of corroded housing as required.

**RATIONALE:** The existing precipitator was designed with a 30 year life and has been in service since 1974. In recent years maintenance costs have been increasing. A 1993 study by Burns & McDonnell recommended a complete rebuild of this precipitator, and a 1997 inspection and report by Precipitator Services Group indicated corrosion of structural members and deterioration of collector plates to the point where ongoing maintenance is not cost effective. The precipitator voltage and rapper controls are antiquated, and parts are unavailable making maintenance repairs more time consuming and more costly.

This project, however, will maximize precipitator performance and extend its life. Further deterioration of the structure and components will result in significant increased costs and less unit availability to facilitate repairs.

**ASSUMPTIONS:**

- We must maintain environmental compliance.
- Particulate removal is critical to the new gypsum conversion project.
- Structural integrity could be jeopardized if not addressed at this time.
- The electrostatic precipitator is a critical pollution control device.

March 9, 2000

Refurbish Electrostatic Precipitator, Mill Creek Unit 2

002961

Wholesale Electric Business  
Capital Project Request

CONSTRUCTION SUMMARY: This work will need to be completed during the unit outage scheduled for February - April, 2001. Engineering and procurement will need to begin 3rd quarter 2000. Preliminary work on electrical systems, precipitator component fabrication, and insulation removal will need to be done prior to the beginning of the outage. The extent of this project will require 24 hour work days for the duration of the outage. The cost estimate is based on similar work done in the Spring of 1998 on Mill Creek Unit 1, and with only \$200,000 budgeted for year 2000, we must negotiate minimal year 2000 payments with the successful bidder.

ESTIMATED MAJOR COST ITEMS:

• Upgrade 480v. power distribution system	\$ 265,000
• New automatic voltage and rapper controls	\$ 175,000
• 16 new transformer / rectifiers with current limiting reactors	\$ 285,000
• 256 MIGI rappers	\$ 290,000
• New rigid discharge electrodes and collecting plates	\$ 1,255,000
• High voltage penthouse	\$ 190,000
• Remove & replace insulation	\$ 125,000
• High pressure wash of precipitator	\$ 17,000
• New ESP and flyash hopper doors	\$ 60,000

FINANCIAL SUMMARY: We believe that this project is absolutely necessary in order to maintain our commitments to reduce maintenance expense, maintain availability and meet current environmental regulations. Since the value of this strategic objective cannot be fully quantified, no financial benefit analysis was conducted. Known benefits, while not quantified, are listed below:

- Insure structural integrity.
- Reduce frequency of section outages and derates due to component failures.
- Improve controllability of precipitator.
- Reduce fan horsepower due to air leakage.
- Restore failed insulation.
- Incorporate state of art controls.
- Reduce flyash carryover to SDRS.
- Reduce outage maintenance associated with precipitator internals.
- Extend existing precipitator life and on-going compliance with current air emissions standards.

RISKS:

March 9, 2000

Refurbish Electrostatic Precipitator, Mill Creek Unit 2

Wholesale Electric Business  
Capital Project Request

- Forced outage due to failures in the precipitator.
- Gypsum quality issues due to flyash carryover.

ALTERNATIVES: The alternative is a complete replacement of the existing precipitator with a precipitator of modern design. It is estimated that the cost of a new precipitator will exceed \$12,000,000.

PROJECT TEAM:

Plant Approval: \_\_\_\_\_ Date: \_\_\_\_\_

CE&CM Engineer: \_\_\_\_\_ Date: \_\_\_\_\_

March 9, 2000

Refurbish Electrostatic Precipitator, Mill Creek Unit 2

002963

# AUTHORIZATION FOR CAPITAL EXPENDITURE

LG&E Energy Corp. ☐ RAS  
Louisville Gas & Electric Co. ☒ Non-Utility Pwr Gen  
Kentucky Utilities ☐ WKEC  
EM ☐ Other:

Budget Ref. 103860 Project Number 103860  
Construction Task Retirement Task  
11A 51B

Location or Plant MILL CREEK GENERATING STATION

Acct No. (If WO N/A):

Date Requested: Nov. 19, 1999

Name of Project

Work To Start: ASAP

Repair Electrostatic Precipitator, Mill Creek Unit 3

To Be Completed: April, 2000

Budget Check

Date Approved

Responsible Group: 232

Dept. No.:

12-9-99

12-9-99

Class. Category:

Class. Code:

Product Code:

## REASONS FOR AND DESCRIPTION OF PROJECT

This authority is requested to cover the repairs to the outlet ductwork & expansion joints, the inlet elbows & turning vanes, and the B-Side of the electrostatic precipitator. This work is planned for the March - April, 2000 unit outage.

## ESTIMATED CUSTOMER COSTS (Utility Only)

## ESTIMATED COMPANY COSTS

Constr. & Rem. Costs	\$	New Construction/Purchase Costs	\$3,448,000
Oper & Maint Costs	\$	Add -- Removal Costs	\$52,000
Associated Costs	\$	Deduct -- Salvage	
Subtotal	\$	Budget Cost -- Subtotal	\$3,500,000
Deduct -- Salvage	\$	Local Engineering (Utility)	\$90,000
		Sales Tax	
Estimated Total Costs	\$	Est. Net Capital Expenditure	\$3,590,000

Estimated Original Cost of Asset to be Retired

\$0

Prepared By: R. C. Kittle

Checked By:

Tax District: South Dixie Fire District ( 047

See Sketch No.

Signature Required (Based on Total Cost of Project) Please route in order checked:

Supervisor/Team Leader (up to \$25,000):

Manager (\$25,001 to \$100,000):

Director (\$100,001 to \$300,000):

Forecasting & Budgeting (\$300,000 & Up):

Officer (\$300,001 to \$1,000,000):

Exec VP/Company President (>\$1,000,001 to \$2,000,000):

CFO (> \$2,000,000):

Vice Chairman/COO (> \$2,000,000 to \$3,000,000):

Chairman/CEO (> \$3,000,000):

Information Technology (REQUIRED FOR IT PROJECTS):

Property Accounting/Division Controller:

N:\ACEFORM.xls

Forecasting and Budgeting

11/24/1999

002964



*Internal Memo*

December 8, 1999

To: Roger Hale  
Vic Staffieri  
~~Foster Duncan~~

From: Helena Rawson *HR*

RE: Approval of ACE 103860, Repair Mill Creek 3 Electrostatic Precipitator

Generation Services is requesting authorization to spend \$3,590k to repair the Mill Creek Unit 3 Electrostatic Precipitator during the next planned outage in March. Power Generation has included this amount in its 2000 Investment Plan for this project. Although the 2000 plan has not yet been approved, approval on this project is required now to meet the construction schedule. This proposal is intended to restore the structural integrity of the precipitator and to assure that the performance meets or exceeds the original design efficiencies. No financials were done, as this project is necessary to maintain environmental compliance; however, some annual O&M benefits have been identified. This project is recommended for approval.

This project requires your approval before proceeding. *Please return to Helena Rawson (x2654) when your review is completed.*

Thank you.

002965

Wholesale Electric Business  
Capital Project Request

**Repair Electrostatic Precipitator, Mill Creek Unit 3**

Project No.	103860	2000 Estimate:	\$ 3,500,000	Total Estimate:	\$ 3,500,000
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**CORPORATE GOALS SUPPORTED:** This project supports the corporate goals of reliability improvement and environmental compliance.

**PROPOSAL:** The objective of this project is to restore the structural integrity of the precipitator and to assure that the performance meets the original design efficiency. The scope includes the following:

- Replace all collecting plates and rigid discharge electrodes in the "B side" of the precipitator.
- Replace perforated gas distribution plates at the BA & BB precipitator inlets.
- Replace hot roof & insulation on the "B side" of the precipitator.
- Replace all precipitator outlet nozzles and all ductwork & expansion joints to the ID Fan inlets.
- Rebuild the "B side" precipitator housing by plating where necessary.
- Replace outlet girder walls on both "A side" and "B side" of the precipitator.
- Replace or repair corroded structural members as required.
- Repair A & B inlet ducts in area of upper turning vanes and replace turning vanes.

**RATIONALE:** The existing precipitator has been in service since 1978, but earlier this year the plates and electrodes were removed from the first two inlet sections on the "B side" of the precipitator due to damage in these sections. Recent inspections have revealed that many areas of the precipitator are in need of repair. The housings or boxes have thin spots and holes that need repairing to eliminate the entrance of corrosion causing outside air into the precipitator. All six perforated plates on the "B side" inlets are deteriorated to the point that portions of the plates are missing. The outlet girder walls are corroded and repairs are no longer effective. The outlet ducts and expansion joints from the precipitator to the ID Fans are no longer repairable due to metal thinness. The "B side" hot roof has corroded to the point that repairs are no longer cost effective and replacement is necessary.

The proposed work is necessary to restore performance and to extend the life of the precipitator. Further deterioration of the structure and components will result in significantly increased costs, reduced unit availability, and contamination of gypsum quality.

**ASSUMPTIONS:**

- We must maintain environmental compliance.
- Particulate removal is critical to the new gypsum conversion project.
- Structural integrity could be jeopardized if not addressed at this time.

**CONSTRUCTION SUMMARY:** This work will need to be completed during the 4 week unit outage scheduled for March, 2000. Engineering and procurement should begin 4th quarter 1999.

November 24, 1999

Repair Electrostatic Precipitator, Mill Creek Unit 3

Wholesale Electric Business  
Capital Project Request

Preliminary work on precipitator component fabrication, and insulation removal will need to be done prior to the beginning of the outage. The extent of this project will require 24 hour work days for the duration of the outage. The cost estimate is based on contractor bid pricing.

**ESTIMATED COST BREAKDOWN:**

• Inlet duct repairs and upper turning vane replacement -----	\$ 260,000
• Precipitator internals and roof repairs -----	\$ 2,400,000
• Precipitator improvements (B-side sectionalization and rapping) -----	\$ 240,000
• Outlet duct, expansion joint, and nozzle replacement-----	\$ 600,000
Total -----	\$ 3,500,000

**FINANCIAL SUMMARY:** We believe that this project is absolutely necessary in order to maintain our commitments to reduce maintenance expense, maintain availability and meet current environmental regulations. Since the value of this strategic objective cannot be fully quantified, no financial benefit analysis was conducted. Known benefits, while not quantified, are listed below:

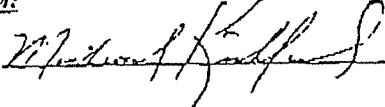
- Insure structural integrity.
- Reduce frequency of section outages and derates due to component failures.
- Improve performance of the precipitator.
- Reduce fan horsepower due to air leakage.
- Restore failed insulation.
- Reduce flyash carryover to SDRS.
- Reduce outage maintenance associated with precipitator internals.
- Extend existing precipitator life.
- Continue on-going compliance with current air emissions standards.

**RISKS:**

- Forced outage due to structural failure.
- Adverse impact on gypsum quality due to flyash contamination.
- Particulate compliance.

**ALTERNATIVES:** The alternative is a complete replacement of the existing precipitator with a precipitator of modern design. It is estimated that the cost of a new precipitator will exceed \$12,000,000.

**PROJECT TEAM:**

Plant Approval:  Date: 12/6/99  
CE&CM Engineer: \_\_\_\_\_ Date: \_\_\_\_\_

November 24, 1999

Repair Electrostatic Precipitator, Mill Creek Unit 3

**EXHIBIT \_ (LK-4)**

# **Project No. 9**

## **Attachment to Question No. 2**

# **Investment Proposal for the Restoration of The Mill Creek FGD Makeup Water System**

## Financial Summary

The project financials have considered very conservative capital costs and benefits. The estimated capital cost as noted is \$1.417 million. Lost generation impacts could likely be much more severe than modeled in the financial analysis, resulting in even greater IRR and NPV than shown.

Based upon the risks that have been identified, a 20-year financial analysis was completed with the following benefit and cost assumptions:

- CWS restoration is the preferred option with the lowest capital cost,
- Lost generation will occur on Unit 4 equivalent to one week per year due to total or partial loss of FGD makeup water,
- Power wash cleaning of FGD modules during outages will be reduced due to improved water quality and availability,
- O&M cost for “thickener” system maintenance (pump and tank) will be avoided, and
- O&M incremental cost for CWS pump maintenance will be incurred.

The financial analysis is attached and is summarized in Table 3.

**Table 3 – Financial Summary**

<b>Cash Flow Analysis</b>	
Capital Cost	\$1.417 million
NPV of cash flows @ 7.9%	\$3.014 million
Internal Rate of Return (IRR)	32.3%
Discounted Payback (years)	4.8

The financial analysis did not include other benefits that are more difficult to quantify but are anticipated by improvement in the FGD water supply. These include:

- Avoided partial or total loss of generated SO<sub>2</sub> credit allowances and the \$4 million per year value of over-scrubbing at Mill Creek,
- Avoided incidents of “rain-out” from the wet stacks due to inefficient mist eliminator wash,
- Avoided cost for “off-spec” gypsum production (high chlorides),
- Reduced FGD corrosion resulting from improved makeup water quality and lower chloride levels in the systems,
- Improved thermal performance for plant cooling system improvements due to increased availability of service water, and
- Reduced discharge of cooling wastewater to the Ohio River.

## Project Management

002971

The key people responsible for delivery of this project are:

Project Sponsor: Mike Kirkland, General Manager – Mill Creek Station

Project Manager: Sam Carr, Yard Operations Supervisor – Mill Creek Station

**EXHIBIT \_\_ (LK-5)**

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to First Set of Data Requests of KIUC Dated September 6, 2002**

**Case No. 2002-00147**

**Question No. 2**

**Witness: Lonnie E. Bellar**

- Q-2. Please provide all documents, memoranda, and correspondence which address the cost effectiveness of the new and additional pollution control facilities in your amended compliance plan.
- A-2. For LG&E Project 7, please see the response to PSC Question No. 8. For the remaining projects, please see the attachment.

# **Project No. 11**

☐ LG&E Energy Corp  
☒ Louisville Gas & Electric Co.  
☐ Kentucky Utilities Company

☐ LEM  
☐ RAS  
☐ Non-Utility Pwr Gen

☐ WKEC  
☐ Other \_\_\_\_\_

Name of Project: **Install Sulfur Dioxide Absorber Trays to Mill Creek Units 3 & 4 Scrubber Modules**

Budgeting Section	Project Number	Related Project Number (s)	Task Number(s)		
Budget Ref.	107360	none	Investment	Retirement	Maintenance
Budget Check			11A <del>11A</del>	none	N/A

Date Requested	Estimated Start Date	Estimated Completion Date	Environmental Code	Environmental Category
01/20/2000	01/20/2000	05/29/2000	NA	NA

Budgeted  
 Y ☐ N ☒

Product Code	Resp. Center	Location
	2401	MC3&4

Category	Code
NA	NA

O & M Savings  
 Y ☒ N ☐

Project Manager	Don Hammack
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Project Manager Phone	933-6622
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### REASONS FOR AND DESCRIPTION OF PROJECT

Sulfur Dioxide Absorber Trays will be added to Mill Creek Units 3 & 4 scrubber modules during the spring 2000 Planned Outages to improve the efficiency of SO<sub>2</sub> removal. This improved process efficiency will allow the Dibasic Acid Feed System to be discontinued. This will save approximately \$900,000 per year. The installed cost of the absorber trays is \$2,750,000. This includes the engineering design, fabrication/procurement and installation of eight absorber trays, one for each of the four scrubber modules on MC3 and MC4. The total cost includes 5.538% for LG&E Administrative and General plus local engineering

Costs	Investment	Retirement	Total Capital Expenditures	Maintenance (Not Required)	Total Project Expenditures
Company Labor	0	0	0	0	0
Contract Labor	2,750,000	0	2,750,000	0	2,750,000
Materials	0	0	0	0	0
Other (Describe)	0	0	0	0	0
Rights of Way	0.00	0.00	0.00	0.00	0.00
Less Salvage	0	0	0	0	0
Local Engineering	0	0	0	0	0
Sub Total	2,750,000	0	2,750,000	0	2,750,000
Contribution In Aid of Construction (CIAC)	NA	0	0	0	0
Net Capital Expenditures	2,750,000	0	2,750,000	0	2,750,000

Sketch No.	Prepared by	Date	Checked by	Date	Checked by	Date	Checked by	Date
	K. W. L. S. W.	1-20-00	2000	1-20-00				

Signature Required (Based on Total Capital Expenditures -> Net Cost to Company)

Authorized by		Signature	Date
1. Supervisor/Team Leader (up to \$25,000)	<input checked="" type="checkbox"/>		
2. Manager (\$25,001 to \$100,000)			
3. Director (\$100,001 to \$300,000)			
4. Forecasting & Budgeting (\$300,000 and up)			
5. Officer (\$300,001 to \$1,000,000)			
6. Exec VP/Company President (\$1,000,001 to \$2,000,000)			
7. CFO (>\$2,000,000)			
8. Energy Corp. President/COO (\$2,000,001 to \$3,000,000)			
9. Chairman/CEO (>\$3,000,000)			
10. Information Technology (Required for IT Projects)			
11. Property Accounting/Division Controller			

### Project Summary

This project calls for the installation of the FGD absorber trays mentioned in the Process Summary on Mill Creek Units 3&4. Mill Creek Units 1&2 are proposed for conversion during the 2001 outage. The Ghent Unit 1 scrubber currently has this equipment and has had successful operation for the past 5 years.

Due to increase scrubbing necessary to meet Phase II Clear Air standards, Mill Creek Units 3&4 are planned to begin using increased DBA in early 2000. Nine hundred thousand dollars is estimated and budgeted annually to purchase the required DBA. This O&M expenditure would be eliminated with the completion of this Capital project.

The contractor, B&W, guarantees the ability to increase the scrubbing on these units without the use of DBA.

### Financial Summary

The estimated direct cost of the project (for both units) is \$2.5 million. The annual O&M savings is \$900 thousand. It is not anticipated that this equipment will require additional maintenance based on the experience on Ghent Unit 1. The financial analysis was performed with a 15 year life of the equipment, although the contractor believes the equipment will last for the life of the unit.

Base on the above assumptions, the project yields the following results.

- IRR            21.73%
- NPV           \$2,296k

The project not only provides positive financial results for the company, but relieves some operational complexity associated with the tight regulation of DBA and limestone that is required for the desired scrubbing rate.

## FGD Operation with DiBasic Acid Addition and Absorber Trays

### Process Summary

Forced oxidation, flue gas desulfurization (FGD) is a process where coal combustion flue gases are contacted with an alkaline, limestone-based slurry for removal of sulfur dioxide. Sulfur dioxide is absorbed and neutralized by the alkaline slurry. The absorbed and neutralized sulfur dioxide is then precipitated as an insoluble calcium sulfate solid (gypsum).

Limestone is continually added to sustain the FGD scrubbing process and provides the required slurry alkalinity for absorption and neutralization of the acidic sulfur dioxide. For the limestone to contribute to the process, the solid limestone, or calcium carbonate, must dissolve into the slurry liquor. Operation at higher pH allows for increased sulfur dioxide removal by the FGD. However, at high slurry pH, there is less driving force for limestone dissolution. This results in decreased limestone utilization efficiency and higher limestone consumption per ton of scrubbed sulfur dioxide when operating at a higher pH. Thus high pH operation yields higher sulfur dioxide removal but inefficient limestone usage.

The FGD process is affected by both mechanical and chemical factors. These factors affect the scrubbing capability of the FGD along with the utilization efficiency of the limestone. Mechanical considerations include reaction tank capacity, absorber size, and liquid to gas ratio (L/G). Chemical considerations include the slurry alkalinity typically measured by slurry pH. Mechanical design deficiencies such as small reaction tanks or low L/G will require operation with higher slurry alkalinity (pH) to achieve the desired sulfur dioxide removal. Therefore, FGD systems with mechanical design deficiencies will typically require operation at higher slurry pH and decreased limestone utilization.

In cases where there are design deficiencies or limitations, the use of chemical additives such as di-basic acid (DBA) can allow for improved process chemistry and increased sulfur dioxide removal. DBA buffers the slurry pH resulting in operation at a lower pH with higher limestone utilization. With DBA the required slurry alkalinity can be increased by addition of more limestone while maintaining high limestone utilization. If additional scrubbing is required, DBA concentrations can be increased to maintain the required slurry alkalinity and high limestone utilization.

Although an effective method to improve FGD efficiency, DBA usage requires tight process control to achieve the desired sulfur dioxide removal and limestone utilization. Overfeeding DBA can result in excessive suppression of the FGD pH and swings in the limestone feed rate to maintain the desired pH set point. DBA also requires unique storage and feed systems to avoid freezing and product crystallization. Frequent lab testing and feed rate re-sets are required to maintain target concentrations.

An alternative to DBA, is the use of FGD absorber trays to improve the mechanical aspect of the absorber for contacting the slurry and the flue gas. Installation of an absorber tray without use of DBA will increase the sulfur dioxide removal capability of the FGD, while avoiding operation at elevated pH. Use of a tray also allows for less variability in the operating pH that can occur with fluctuations in DBA control. It also simplifies process chemistry control and eliminates the need for the specialized DBA storage and feed system. Trays also improve the absorber gas distribution, which in turn can improve the mist eliminator performance.

**EXHIBIT \_\_ (LK-6)**

**002978**

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to First Set of Data Requests of KIUC Dated September 6, 2002**

**Case No. 2002-00147**

**Question No. 2**

**Witness: Lonnie E. Bellar**

- Q-2. Please provide all documents, memoranda, and correspondence which address the cost effectiveness of the new and additional pollution control facilities in your amended compliance plan.
- A-2. For LG&E Project 7, please see the response to PSC Question No. 8. For the remaining projects, please see the attachment.

BUDGET REF.				PROJECT NUMBER	
101299				101299	
CONSTRUCTION TASK				RETIREMENT TASK	
11A				61B	
ACCT NO. (IF WO N/A):					
DATE REQUESTED:				Feb. 11, 2000	
WORK TO START:				June 1, 2000	
TO BE COMPLETED:				Dec. 31, 2001	
BUDGET CHECK				DATE APPROVED	
LG&E Energy Corp. <input type="checkbox"/> RAS Louisville Gas & Electric Co. <input checked="" type="checkbox"/> Non-Utility Pwr Gen Kentucky Utilities <input type="checkbox"/> WKEC LEM <input type="checkbox"/> Other:					
LOCATION OR PLANT: MILL CREEK GENERATING STATION					
NAME OF PROJECT: MC2 - Refurbish Electrostatic Precipitator					
RESPONSIBLE GROUP: 232		DEPT. NO.:			
CLASS. CATEGORY:		CLASS. CODE:		PRODUCT CODE:	
REASONS FOR AND DESCRIPTION OF PROJECT					
Authority is requested to cover the cost of refurbishing the electrostatic precipitator on Mill Creek Unit 2. This work is necessary to return the precipitator to like new condition, and to meet air quality standards. New controls to improve efficiency are included as a part of this work along with other improvements to reduce maintenance and increase reliability.					
Authority requested for year 2000 — \$ 200,000.00 Authority requested for year 2001 — \$ 3,400,000.00 Total authority requested — \$ 3,600,000.00					
ESTIMATED CUSTOMER COSTS (Utility Only)			ESTIMATED COMPANY COSTS		
Constr. & Rem. Costs	\$		New Construction/Purchase Costs	\$	2,800,000.00
Oper & Maint Costs	\$		Add — Removal Costs	\$	800,000.00
Associated Costs	\$		Deduct — Salvage		
Subtotal	\$		Budget Cost — Subtotal	\$	3,600,000.00
Deduct — Salvage	\$		Local Engineering (Utility)	\$	93,000.00
			Sales Tax		
Estimated Total Costs	\$		Est. Net Capital Expenditure	\$	3,693,000.00
Estimated Original Cost of Asset to be Retired					
Prepared By: R. C. Kittle			Checked By:		
			Tax District: South Dixie Fire District (047)		
See Sketch No.					
Signature Required (Based on Total Cost of Project) - Please route in order checked:					
Supervisor/Team Leader (up to \$25,000):					
Manager (\$25,001 to \$100,000): <i>J. P. Mallory</i> 3-9-00					
Director (\$100,001 to \$300,000): <i>M. J. K. H. A.</i> 3-13-00					
Forecasting & Budgeting (\$300,000 & Up):					
Officer (\$300,001 to \$1,000,000):					
Exec VP/Company President (>\$1,000,001 to \$2,000,000):					
CFO (> \$2,000,000):					
Vice Chairman/COO (> \$2,000,000 to \$3,000,000):					
Chairman/CEO (> \$3,000,000):					
Information Technology (REQUIRED FOR IT PROJECTS):					
Property Accounting/Division Controller: Forecasting and Budgeting					

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